

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.11.95  
Test oil : ISO 4113

Part no. : 0 460 494 372  
Pump designation : VE4/9F2250R571-1

## Customer-spec. information

Customer : OPEL  
Motor : 1,7 DTL  
Power KW : 50.0

## TEST BENCH REQUIREMENTS

### Calibrating-oil return

temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000

Setting mm : 4.2  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.4  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.3  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Check tolerance  
cm<sup>3</sup>/1000s. : 2.5  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Check tolerance  
cm<sup>3</sup>/1000s. : 2.5

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 4.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 540  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2550  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 44.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 8.0  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 44.0

Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1000  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.6  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

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#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2250  
Aneroid pressure  
hPa : 1000  
SV travel mm : 7.7



Tolerance mm +- : 0.3  
 Check  
 tolerance mm +- : 0.6  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000

SV travel mm : 1.7  
 Tolerance mm +- : 0.3  
 Check  
 tolerance mm +- : 0.6  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 400  
 Aneroid pressure  
 hPa : 1000

SV travel mm : 1.8  
 Tolerance mm +- : 1.0  
 Check  
 tolerance mm +- : 1.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 800  
 Aneroid pressure  
 hPa : 1000

SV travel mm : 3.0  
 Tolerance mm +- : 1.0  
 Check  
 tolerance mm +- : 1.2  
 Shutoff solenoid  
 Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2250  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 8.5  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000

Supply pump  
 pressure bar : 5.0  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s +- : 41.6

Check tolerance  
 ccm/10s +- : 41.6  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 700  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2

Check tolerance  
 ccm/10s +- : 22.2  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2550  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 24.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 2725  
 Aneroid pressure  
 hPa : 1000

Del. quantity	
cm3/1000 strokes	: 7.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 2950
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm3/1000 strokes	: 2.0
Tolerance	
cm3/1000 str. +- :	2.0
Check tolerance	
cm3/1000S. +- :	2.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 2250
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm3/1000 strokes	: 36.5
Tolerance	
cm3/1000 str. +- :	1.3
Check tolerance	
cm3/1000S. +- :	2.3
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 500
Del. quantity	
cm3/1000 strokes	: 31.0
Tolerance	
cm3/1000 str. +- :	2.5
Check tolerance	
cm3/1000S. +- :	3.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 1800
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm3/1000 strokes	: 36.2
Tolerance	
cm3/1000 str. +- :	1.5
Check tolerance	
cm3/1000S. +- :	2.3
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12

Rated speed rpm	: 700
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm3/1000 strokes	: 31.5
Tolerance	
cm3/1000 str. +- :	1.5
Check tolerance	
cm3/1000S. +- :	3.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 1200
Aneroid pressure	
hPa	: 1000
Del. quantity	
cm3/1000 strokes	: 33.3
Tolerance	
cm3/1000 str. +- :	0.5
Check tolerance	
cm3/1000S. +- :	2.3
Shutoff solenoid	
Volt	: 12
Rated speed rpm	: 700
Aneroid pressure	
hPa	: 50
Tolerance	
cm3/1000 str. +- :	0.5
Check tolerance	
cm3/1000S. +- :	0.5
Check tolerance	
cm3/1000S. +- :	0.5
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12
Rated speed rpm	: 700
Aneroid pressure	
hPa	: 170
Del. quantity	
cm3/1000 strokes	: 2.4
Tolerance	
cm3/1000 str. +- :	1.0
Check tolerance	
cm3/1000S. +- :	1.0
Shutoff solenoid	
Volt	: 12
KSB/AFB Volt	: 12

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ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 485  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 485  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 485  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 9.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.5  
 Shutoff solenoid  
 Volt : 12  
 KSB/AFB Volt : 12

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 4.0  
 Shutoff solenoid  
 Volt : 12  
 KSB/AFB Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.6  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 0.1  
 Shutoff solenoid  
 Volt : 12  
 KSB/AFB Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.0  
 Shutoff solenoid  
 Volt : 12  
 KSB/AFB Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Tolerance mm ± : 0.3  
 Check  
 tolerance mm ± : 0.4  
 Shutoff solenoid  
 Volt : 12  
 KSB/AFB Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 16.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.5  
 Shutoff solenoid  
 Volt : 12

KSB/AFB Volt : 12

#### START TRANSITION

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Shutoff solenoid  
Volt : 12  
KSB/AFB Volt : 12

Rated speed rpm : 250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12  
KSB/AFB Volt : 12

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#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,4  
Tolerance mm + : +0,2  
Dimension MS mm : 0,9  
Tolerance mm + : +0,2

#### MICROSWITCH SET

: ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 24,2..26,2  
Control lever  
position YB mm : 53,0..61,6

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 03.01.96  
Test oil : ISO 4113

Part no. : 0 460 424 104  
Pump designation : VE4/12F1200R572

Customer-spec. information  
Customer : MAN  
Motor : D 0824 LFL 01  
Power KW : 114.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1200

Setting mm : 2.6  
Tolerance mm ± : 0.2

KSB/AFB Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1200

Supply pump  
pressure bar : 6.7  
Tolerance bar ± : 0.3

KSB/AFB Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1200

Del. quantity  
cm<sup>3</sup>/1000 strokes : 108.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.5

KSB/AFB Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 61.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.5

KSB/AFB Volt : 12

## IDLE SETTING

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 15.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000s. : 6.5

KSB/AFB Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1300  
Pressure hPa : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 70.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0

KSB/AFB Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 130.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 30.0

KSB/AFB Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 45.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0

KSB/AFB Volt : 12

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#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 950  
Aneroid pressure  
hPa : 1200

SV travel mm : 3.8  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7

KSB/AFB Volt : 12

Rated speed rpm : 750

Aneroid pressure  
hPa : 1200

SV travel mm : 1.4  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7

KSB/AFB Volt : 12

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1200

SV travel mm : 4.8  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.4

KSB/AFB Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1200  
Supply pump  
pressure bar : 8.4  
Tolerance bar ± : 0.3

KSB/AFB Volt : 12

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1200  
Supply pump  
pressure bar : 5.2  
Tolerance bar ± : 0.3

KSB/AFB Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 550  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s ± : 22.2

Check tolerance  
ccm/10s ± : 22.2

KSB/AFB Volt : 12

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1200  
Overflow quantity  
ccm/10s : 97.2

Tolerance  
ccm/10s      + :      41.6

Check tolerance  
ccm/10s      + :      41.6

KSB/AFB Volt      :      12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm      :      1300

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      70.0

Tolerance  
cm<sup>3</sup>/1000 str.      + :      3.0

Check tolerance  
cm<sup>3</sup>/1000S.      + :      8.5

KSB/AFB Volt      :      12

Rated speed rpm      :      1400

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      7.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      7.5

KSB/AFB Volt      :      12

Rated speed rpm      :      1450

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      1.5

Tolerance  
cm<sup>3</sup>/1000 str.      + :      1.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      1.5

KSB/AFB Volt      :      12

Rated speed rpm      :      1350

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      35.0

Tolerance  
cm<sup>3</sup>/1000 str.      + :      20.0

Check tolerance  
cm<sup>3</sup>/1000S.      + :      20.0

KSB/AFB Volt      :      12

Rated speed rpm      :      550

Aneroid pressure  
hPa      :      400

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      84.0

Tolerance  
cm<sup>3</sup>/1000 str.      + :      0.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      2.5

KSB/AFB Volt      :      12

Rated speed rpm      :      1200

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      103.5

Tolerance  
cm<sup>3</sup>/1000 str.      + :      2.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      4.0

KSB/AFB Volt      :      12

Rated speed rpm      :      700

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      112.5

Tolerance  
cm<sup>3</sup>/1000 str.      + :      2.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      4.0

KSB/AFB Volt      :      12

Rated speed rpm      :      850

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      114.0

Tolerance  
cm<sup>3</sup>/1000 str.      + :      2.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      4.0

KSB/AFB Volt      :      12

Rated speed rpm      :      550

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes      :      114.0

Tolerance  
cm<sup>3</sup>/1000 str.      + :      4.5

Check tolerance  
cm<sup>3</sup>/1000S.      + :      6.0

KSB/AFB Volt      :      12

Rated speed rpm      :      1000

Aneroid pressure  
hPa      :      1200

Del. quantity  
cm<sup>3</sup>/1000 strokes : 108.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.5

#### MECHANICAL SHUTOFF

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
KSB/AFB Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
KSB/AFB Volt : 12

#### START TRANSITION

Rated speed rpm : 370  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 70.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 20.0  
KSB/AFB Volt : 12

Rated speed rpm : 270  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 95.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
KSB/AFB Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,4  
Tolerance mm ± : ±0,2  
MS1 dimension mm : 1,5  
Tolerance mm ± : +0,15/-0,1  
KSB travel mm : 7,1

#### MICROSWITCH SET

mm : GST 71,9

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 37,4..40,4

Control lever  
position YB mm : 36,9..42,1

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 17.10.95  
Test oil : ISO 4113

Part no. : 0 460 414 109  
Pump designation : VE4/11F2000R573

## Customer spec. information

Customer : IVECO-SOFIM  
Motor : 8140.07.3700

## TEST BENCH REQUIREMENTS

### Calibrating-oil return

temperature °C : 45  
Tolerance °C ± : 1

Overflow restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder assembly : 1 688 901 027

Opening pressure bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1600

Setting mm : 2.9  
Tolerance mm ± : 0.1  
Shutoff solenoid Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1100  
Supply pump pressure bar : 6.3  
Tolerance bar ± : 0.3  
Shutoff solenoid Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1100  
Rated speed rpm : 500  
Del. quantity cm3/1000 strokes : 48.0  
Del. quantity cm3/1000 strokes : 33.0  
Tolerance cm3/1000 str. ± : 0.5  
Tolerance cm3/1000 str. ± : 0.5  
Spread cm3/1000 strokes : 3.5  
Shutoff solenoid Volt : 12  
Shutoff solenoid Volt : 12  
Check tolerance cm3/1000S. : 4.5

## IDLE SETTING

Rated speed rpm : 350  
Del. quantity cm3/1000 strokes : 12.5  
Tolerance cm3/1000 str. ± : 2.0  
Shutoff solenoid Volt : 12  
Spread cm3/1000 strokes : 3.0  
Check tolerance cm3/1000S. : 6.5

## FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
Del. quantity cm3/1000 strokes : 30.0

Tolerance  
cm3/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm3/1000 strokes : 75.0  
Tolerance  
cm3/1000 str. +- : 20.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1800  
  
SV travel mm : 3.9  
Tolerance mm +- : 0.3  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1200  
  
SV travel mm : 0.7  
Tolerance mm +- : 0.3  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 550  
  
SV travel mm : 2.5  
Tolerance mm +- : 1.2  
Check  
tolerance mm +- : 1.5  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 2000  
  
SV travel mm : 4.5  
Tolerance mm +- : 0.3  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 8.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 4.3  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 550  
Supply pump  
pressure bar : 7.7  
Tolerance bar +- : 0.5  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 111.1  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Overflow quantity  
ccm/10s : 138.8  
Tolerance  
ccm/10s +- : 55.5

Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
Del. quantity  
cm3/1000 strokes : 30.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000s. +- : 4.5

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Del. quantity  
 cm3/1000 strokes : 41.0  
 Tolerance  
 cm3/1000 str. + : 4.0  
 Check tolerance  
 cm3/1000S. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2350  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

Aneroid pressure  
 hPa :

LDA/  
 HBA stroke mm : 9.0

Rated speed rpm : 2000  
 Del. quantity  
 cm3/1000 strokes : 47.0  
 Tolerance  
 cm3/1000 str. + : 2.5  
 Check tolerance  
 cm3/1000S. + : 3.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1500  
 Del. quantity  
 cm3/1000 strokes : 51.5  
 Tolerance  
 cm3/1000 str. + : 2.5  
 Check tolerance  
 cm3/1000S. + : 3.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 33.0  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 3.5  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5

IDLE DELIVERY

Rated speed rpm : 450  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 325  
 Del. quantity  
 cm3/1000 strokes : 24.0  
 Tolerance  
 cm3/1000 str. + : 5.0  
 Check tolerance  
 cm3/1000S. + : 6.0  
 Shutoff solenoid  
 Volt : 12

START TRANSITION

Rated speed rpm : 450  
 Del. quantity  
 cm3/1000 strokes : 25.0  
 Tolerance  
 cm3/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 20.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 9.0  
Dimension K mm : 3,5  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 8,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,5  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### CONTROL LEVER POSITION SET

Control Lever  
position YA mm : 36,8..40,9

Control Lever  
position YB mm : 44,4..49,6

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.01.96  
Test oil : ISO 4113  
  
Part no. : 0 460 426 233  
Pump designation : VE6/12F1100R579

Customer-spec. information  
Customer : FNH-GEOTECH  
Motor : 7.5 L NA/DI

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C + : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holde  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar + : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,0  
Tolerance mm + : +0,2  
Outlet : B

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 600  
  
Setting mm : 1.6  
Tolerance mm + : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 600  
Supply pump  
pressure bar : 5.5  
Tolerance bar + : 0.2  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600  
Rated speed rpm : 800  
Del. quantity  
cm3/1000 strokes : 66.5  
Del. quantity  
cm3/1000 strokes : 69.5  
Tolerance  
cm3/1000 str. + : 0.5  
Tolerance  
cm3/1000 str. + : 0.5  
Spread  
cm3/1000 strokes : 5.0  
Spread  
cm3/1000 strokes : 5.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000s. : 5.0

### IDLE SETTING

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 15.0  
Tolerance  
cm3/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 5.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 85.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 750  
  
SV travel mm : 2.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
  
SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1100  
  
SV travel mm : 2.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1100  
Supply pump  
pressure bar : 7.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 475  
Supply pump  
pressure bar : 4.9  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1100  
Overflow quantity  
ccm/10s : 138.8  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 475  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 8.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 1260  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

Aneroid pressure  
hPa :

LDA/  
HBA stroke mm : 5.0

Rated speed rpm : 1100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 66.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 56.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 69.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5

IDLE DELIVERY

Rated speed rpm : 460  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 115.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5.0  
Dimension K mm : 3,7  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,3  
Tolerance mm  $\pm$  :  $\pm 0,2$

CONTROL LEVER POSITION  
SET

Control Lever  
position YA mm : 32,8..34,8

Control Lever  
position YB mm : 39,6..46,2

---

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.01.96  
Test oil : ISO 4113  
Part no. : 0 460 426 238  
Pump designation : VE6/12F1100R579-1

Customer-spec. information  
Customer : FNH-GEOTECH  
Motor : 7.5 L TC

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,0  
Tolerance mm ± : ±0,2  
Outlet : B

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 800  
Setting mm : 1.2  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 800  
Supply pump  
pressure bar : 6.2  
Tolerance bar ± : 0.2  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600  
Rated speed rpm : 1050  
Del. quantity  
cm3/1000 strokes : 61.5  
Del. quantity  
cm3/1000 strokes : 62.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 5.0  
Spread  
cm3/1000 strokes : 5.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 5.0

### IDLE SETTING

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 15.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. : 5.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 95.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 900  
  
SV travel mm : 1.8  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
  
SV travel mm : 0.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1100  
  
SV travel mm : 2.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1100  
Supply pump  
pressure bar : 7.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 475  
Supply pump  
pressure bar : 4.9  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1100  
Overflow quantity  
ccm/10s : 138.8  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 475  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 8.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1260  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1100  
 Del. quantity  
 cm3/1000 strokes : 59.5  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 3.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 53.0  
 Tolerance  
 cm3/1000 str. +- : 6.0  
 Check tolerance  
 cm3/1000S. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 800  
 Del. quantity  
 cm3/1000 strokes : 67.5  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 3.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 475  
 Del. quantity  
 cm3/1000 strokes : 53.5  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 4.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1050  
 Del. quantity  
 cm3/1000 strokes : 62.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 3.0

Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

IDLE DELIVERY

Rated speed rpm : 450  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

START TRANSITION

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 80.0  
 Tolerance  
 cm3/1000 str. +- : 15.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 200  
 Del. quantity  
 cm3/1000 strokes : 120.0  
 Tolerance  
 cm3/1000 str. +- : 25.0  
 Shutoff solenoid  
 Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
 Tolerance mm +- : +0,1  
 Dimension KF mm : 6,4  
 Tolerance mm +- : +0,2

Dimension MS mm : 1,4  
Tolerance mm  $\pm$  :  $\pm 0,2$

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 32,8..34,8

Control lever  
position YB mm : 39,7..46,3

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 01.04.95  
Test oil : ISO 4113

Part no. : 0 460 416 078  
Pump designation : VE6/11F1150R586

## Customer-spec. information

Customer : IVECO-FIAT  
Motor : 8065.05.240  
Power Kw : 83.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 55  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 800  
Setting mm : 2.4  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 800  
Supply pump  
pressure bar : 6.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 64.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 3.5  
Shutoff solenoid  
Volt : 12

## IDLE SETTING

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 3.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.0

## FULL-LOAD SPEED REGULATION

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

## STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 100.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 30.0  
Shutoff solenoid  
Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 700  
SV travel mm : 1.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.9  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1150  
SV travel mm : 3.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1150  
Supply pump  
pressure bar : 8.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 5.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 1150  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1270  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 58.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 3.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 62.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 3.5

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 700

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 64.0

Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0

Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 300

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5

Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 300

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5

Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5

Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 400

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5

Shutoff solenoid  
 Volt : 12

START TRANSITION

A25

Rated speed rpm : 250

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 60.0

Tolerance  
 cm<sup>3</sup>/1000 str. + : 15.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 150

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 105.0

Tolerance  
 cm<sup>3</sup>/1000 str. + : 30.0

Shutoff solenoid  
 Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3

Tolerance mm + : +0,1

Dimension KF mm : 5,4

Tolerance mm + : +0,2

Dimension MS mm : 1,2

Tolerance mm + : +0,2

CONTROL LEVER POSITION  
 SET

Control lever  
 position YA mm : 36,5..38,5

Control lever  
 position YB mm : 43,7..48,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.12.95  
Test oil : ISO 4113

Part no. : 0 460 484 073  
Pump designation : VE4/8F2050R588

Customer-spec. information  
Customer : RENAULT  
Motor : F80 - 640  
Power KW : 40.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Setting mm : 3.2  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Supply pump  
pressure bar : 6.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0



Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 27.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
  
SV travel mm : 5.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
  
SV travel mm : 1.0  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
  
SV travel mm : 2.1  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 8.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 27.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2550  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 2.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 34.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1625  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.9  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

START TRANSITION

Rated speed rpm : 310  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 15.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 210  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 60.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 15.0  
 Shutoff solenoid  
 Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
 Tolerance mm ± : ±0,1

Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : -

Control lever  
position YB mm : -

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks.

Refer to Service Info for test and adjustment instructions.

See microboard(s) W400/...

Edition : 12.12.95  
Test oil : ISO 4113

Part no. : 0 460 484 086  
Pump designation : VE4/8F2050R588-1

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 640  
Power KW : 47.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Setting mm : 3.2  
Tolerance mm ± : 0.2  
Shutoff sol  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Supply pump  
pressure bar : 6.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0

Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2150  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 27.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 55.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 5.4  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000

SV travel mm : 1.0  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250

SV travel mm : 2.1  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 8.0  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Supply pump  
 pressure bar : 3.3  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2150  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 27.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 16.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2550  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 2.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 34.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1625  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.9  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.3  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

START TRANSITION

Rated speed rpm : 310  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 15.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 210  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 60.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 15.0  
 Shutoff solenoid  
 Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
 Tolerance mm ± : ±0,1

Dimension KF mm : 5,4  
Tolerance mm +- : +0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 16,0..20,0

Control lever  
position YB mm : 65,9..77,7

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 12.01.96  
Test oil : ISO 4113  
Part no. : 0 460 404 081  
Pump designation : VE4/10F2100R589

Customer-spec. information  
Customer : IVECO-SOFIM  
Motor : 8140.67.2550  
Power KW : 56.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Prestroke

B06

(as of UT) mm : 0,2  
Tolerance mm ± : 0,02  
Check  
tolerance mm ± : 0,04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1200  
Setting mm : 2.1  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1200  
Supply pump  
pressure bar : 6.1  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 42.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

### IDLE SETTING

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5

### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0



Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 90.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 20.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -14.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.8  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1800  
 SV travel mm : 6.2  
 Tolerance mm ± : 0.3

Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2100

SV travel mm : 7.4  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1600

SV travel mm : 4.8  
 Tolerance mm ± : 0.3  
 Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100  
 Supply pump  
 pressure bar : 8.6  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Supply pump  
 pressure bar : 4.2  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2100  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s ± : 41.6  
 Check tolerance  
 ccm/10s ± : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
 ccm/10s ± : 22.2

Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 41.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 42.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.0  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

---

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

## DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm3/1000 strokes : -18.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm3/1000 strokes : -0.8  
Tolerance  
cm3/1000 str. +- : 0.1  
Check tolerance  
cm3/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

## DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.4  
Shutoff solenoid  
Volt : 12

## EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1200  
Del. quantity  
cm3/1000 strokes : 20.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

## START TRANSITION

B09

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 35.0  
Tolerance  
cm3/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm3/1000 strokes : 70.0  
Tolerance  
cm3/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

## ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -  
Dimension KF mm : 5,8  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,8  
Tolerance mm +- : +-0,2  
KSB travel mm : 10,0  
TLA travel mm : 9,0

MICROSWITCH  
SET

mm : 0,8...3,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,8...44,8

Control lever  
position YB mm : 60,8...69,2

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.03.95  
Test oil : ISO 4113  
Part no. : 0 460 404 082  
Pump designation : VE4/10F2050R591

Customer-spec. information  
Customer : IVECO-SOFIM  
Motor : 8140.67.2560  
Power kW : 56.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test Lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Prestroke

B10

(as of UT) mm : 0,2  
Tolerance mm ± : 0,02  
Check  
tolerance mm ± : 0,04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1200  
Setting mm : 2.2  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1200  
Supply pump  
pressure bar : 6.3  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 42.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

### IDLE SETTING

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5

### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2300

Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 90.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 20.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1800  
SV travel mm : 6.3

Tolerance mm + : 0.3  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100

SV travel mm : 7.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1600

SV travel mm : 4.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100  
Supply pump  
pressure bar : 8.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 4.4  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2100  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2300  
Del. quantity  
cm3/1000 strokes : 25.0  
Tolerance  
cm3/1000 str. + : 2.0  
Check tolerance  
cm3/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400  
Del. quantity  
cm3/1000 strokes : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2600  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Del. quantity  
cm3/1000 strokes : 40.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1500  
Del. quantity  
cm3/1000 strokes : 42.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 38.0  
Tolerance  
cm3/1000 str. + : 2.0

Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1200  
Del. quantity  
cm3/1000 strokes : 42.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.0  
Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 465  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -18.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.4  
Shutoff solenoid  
Volt : 12

---

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5

Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 70.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : -  
Dimension KF mm : 5,8  
Tolerance mm + : +0,2  
Dimension MS mm : 1,8  
Tolerance mm + : +0,2  
KSB travel mm : 10,0  
TLA travel mm : 9,0

MICROSWITCH  
SET

mm : 0,8...3,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,9...44,9

Control lever  
position YB mm : 36,0...44,0

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 19.10.94  
Test oil : ISO 4113  
Part no. : 0 460 494 368  
Pump designation : VE4/9F2200R603

Customer-spec. information  
Customer : VW  
Motor : 1,9 L UD MVEG 2  
Power kW : 55.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 111

Opening pressure  
bar : 147  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

### BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,8  
Tolerance mm +- : +-0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Setting mm : 5.5  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Supply pump  
pressure bar : 5.8  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 46.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000s. : 3.0  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Check tolerance  
cm3/1000s. : 3.0

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 8.0  
Tolerance  
cm3/1000 str. +- : 0.5



Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 18.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2525  
Pressure hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 750  
SV travel mm : 8.6

Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 750

SV travel mm : 3.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 750

SV travel mm : 0.8  
Tolerance mm + : 0.4  
Shutoff solenoid  
Volt : 12

Timing device  
solenoid Volt : 100

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 750  
Supply pump  
pressure bar : 8.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 750  
Supply pump  
pressure bar : 4.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Overflow quantity  
ccm/10s : 77.7  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 34.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 750  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 55.5  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2525  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 34.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 750

Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 44.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 180  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 6.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.0  
Shutoff solenoid  
Volt : 12

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ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 41.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 45.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,2  
Tolerance mm +- : +-0,2

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 30.05.95  
Test oil : ISO 4113

Part no. : 0 460 494 413  
Pump designation : VE4/9F2200R603-1

## Customer-spec. information

Customer : VW  
Motor : 1,9 L UD MVEG 2  
Power KW : 55.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C + : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holde  
assembly : 1 688 901 111

Opening pressure  
bar : 147  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Setting mm : 5.5  
Tolerance mm + : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Supply pump  
pressure bar : 5.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 46.5  
Tolerance  
cm3/1000 str. + : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 8.0  
Tolerance  
cm3/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 22.0

Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Spread  
 cm<sup>3</sup>/1000 strokes : 2.0  
 Shutoff solenoid  
 Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 550  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 18.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2525  
 Pressure hPa : 750  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 20.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 43.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 750  
 SV travel mm : 8.6  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.8  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750

Aneroid pressure  
 hPa : 750  
 SV travel mm : 3.4  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.8  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 750  
 SV travel mm : 0.8  
 Tolerance mm + : 0.4  
 Shutoff solenoid  
 Volt : 12

Timing device  
 solenoid Volt : 100

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 750  
 Supply pump  
 pressure bar : 8.0  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 750  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 750  
 Overflow quantity  
 ccm/10s : 77.7  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2100  
 Aneroid pressure  
 hPa : 750

Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6  
Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2525  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 20.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 34.5  
Tolerance  
cm3/1000 str. +- : 5.0  
Check tolerance  
cm3/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 46.2  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 44.7  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 5.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm3/1000 strokes : 46.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 180  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 0.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 300  
Del. quantity  
cm3/1000 strokes : 6.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 1.0  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str.  $\pm$  : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S.  $\pm$  : 1.5  
Spread  
cm3/1000 strokes : 5.0

Control lever  
position YB mm : 48,6..58,4

---

End of test-specification sheet

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm3/1000 strokes : 41.0  
Tolerance  
cm3/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 180  
Del. quantity  
cm3/1000 strokes : 45.0  
Tolerance  
cm3/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,2  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 36,0..40,0

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.06.95  
Test oil : ISO 4113

Part no. : 0 460 494 416  
Pump designation : VE4/9F2200R604-1

## Customer-spec. information

Customer : VW  
Motor : 1,9 L UD MVEG 2  
Power KW : 55.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C + : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holde  
assembly : 1 688 901 111

Opening pressure  
bar : 147  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Setting mm : 5.5  
Tolerance mm + : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Supply pump  
pressure bar : 5.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Check tolerance  
cm<sup>3</sup>/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.0



Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Spread  
 cm<sup>3</sup>/1000 strokes : 2.0  
 Shutoff solenoid  
 Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 18.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2525  
 Pressure hPa : 750  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 20.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.0  
 Shutoff solenoid  
 Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 43.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 3.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 750

SV travel mm : 8.6  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.8  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750

Aneroid pressure  
 hPa : 750

SV travel mm : 3.4  
 Tolerance mm ± : 0.4

Check  
 tolerance mm ± : 0.8

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 750

SV travel mm : 0.8  
 Tolerance mm ± : 0.4

Shutoff solenoid  
 Volt : 12

Timing device  
 solenoid Volt : 100

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 750

Supply pump  
 pressure bar : 8.0

Tolerance bar ± : 0.3

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 750

Supply pump  
 pressure bar : 4.3

Tolerance bar ± : 0.3

Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 750

Overflow quantity  
 ccm/10s : 77.7

Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
 ccm/10s ± : 34.7

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2100  
 Aneroid pressure  
 hPa : 750

Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6  
  
Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2525  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 34.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 44.7  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 5.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 180  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 6.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.0  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

Control lever  
position YA mm : 36,0..40,0

Control lever  
position YB mm : 48,6..58,4

---

End of test-specification sheet

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 41.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 45.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm + : +0,1  
Dimension KF mm : 6,0  
Tolerance mm + : +0,2  
Dimension MS mm : 1,2  
Tolerance mm + : +0,2

#### MICROSWITCH SET

mm : 0,8...3,0  
: ARF 12,0

#### CONTROL LEVER POSITION SET

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 30.01.96  
Test oil : ISO 4113  
  
Part no. : 0 460 426 243  
Pump designation : VE6/12F1100R620

Customer-spec. information  
Customer : CASE  
Motor : 6T 590

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Prestroke

(as of UT) mm : 0,3  
Tolerance mm ± : ±0,02  
Check  
tolerance mm ± : ±0,04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 750  
  
Setting mm : 2.6  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 24

### SUPPLY PUMP PRESSURE

Rated speed rpm : 750  
Supply pump  
pressure bar : 5.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 900  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 61.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 4.0  
Shutoff solenoid  
Volt : 24

### IDLE SETTING

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.5  
Shutoff solenoid  
Volt : 24  
Spread  
cm<sup>3</sup>/1000 strokes : 9.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 9.0

### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1140  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 85.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 30.0  
Shutoff solenoid  
Volt : 24

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1000  
SV travel mm : 4.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1000  
Supply pump  
pressure bar : 6.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Supply pump  
pressure bar : 4.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

##### OVERFLOW QUANTITY

Rated speed rpm : 1100  
Overflow quantity  
ccm/10s : 83.3  
Tolerance  
ccm/10s + : 27.7

Check tolerance  
ccm/10s + : 27.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 24

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1140  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1175  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 15.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1240  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 61.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 58.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0

Shutoff solenoid  
 Volt : 24

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 35.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 6.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 900  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 61.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 24

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5

IDLE DELIVERY

Rated speed rpm : 520  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 425

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 7.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.5

START TRANSITION

Rated speed rpm : 250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 78.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 150  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 100.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 30.0  
 Shutoff solenoid  
 Volt : 24

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm : 5,2  
 Tolerance mm + : +0,2  
 MS1 dimension mm : 1,36  
 Tolerance mm + : +0,15/-0,1

CONTROL LEVER POSITION  
 SET

Control lever  
 position YA mm : 34,8..38,8

Control lever  
 position YB mm : 39,9..45,1

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 20.10.95  
Test oil : ISO 4113  
  
Part no. : 0 460 484 081  
Pump designation : VE4/8F240GR622

Customer-spec. information  
Customer : FORD  
Motor : 1,8 L IDI  
Power KW : 44.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

C01

Plunger stroke mm : 0,85  
Tolerance mm ± : ±0,05  
Outlet : B

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
  
Setting mm : 5.1  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1500  
Del. quantity  
cm3/1000 strokes : 29.0  
Tolerance  
cm3/1000 str. ± : 0.2  
Spread  
cm3/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 8.0  
Tolerance  
cm3/1000 str. ± : 1.0  
Spread  
cm3/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 525  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.4  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2400  
SV travel mm : 9.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 400  
SV travel mm : 2.4  
Tolerance mm + : 0.1  
Check  
tolerance mm + : 1.0  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1000  
SV travel mm : 4.4  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.3  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2400  
Supply pump  
pressure bar : 9.9  
Tolerance bar + : 0.3



Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 4.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2400  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 450  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 4.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2625  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0

Check tolerance  
cm<sup>3</sup>/1000s. + : 1.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 29.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 28.4  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 29.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 29.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.2  
Check tolerance  
cm<sup>3</sup>/1000s. + : 1.7  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 425  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -10.6  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.8  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.1  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 0.1  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
 Tolerance mm +- : 0.4  
 Check  
 tolerance mm +- : 0.4  
 Shutoff solenoid  
 Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 20.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 10.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

#### START TRANSITION

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 32.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 275  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 65.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 15.0  
 Shutoff solenoid  
 Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,8  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### POTENTIOMETER SET

1. measurement  
voltage Volt : 1= 3,4 V  
2. measurement  
voltage Volt : 2= 1,7 V

#### MICROSWITCH SET

mm : 1=ARF 12,0  
: 2=ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 38,0..42,0

Control lever  
position YB mm : 57,3..66,3

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 20.10.95  
Test oil : ISO 4113

Part no. : 0 460 484 082  
Pump designation : VE4/8F2400R622-1

Customer-spec. information  
Customer : FORD  
Motor : 1,8 l IDI  
Power KW : 44.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

C06

Plunger stroke mm : 0,85  
Tolerance mm ± : ±0,05  
Outlet : B

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Setting mm : 5.1  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1500  
Del. quantity  
cm3/1000 strokes : 29.0  
Tolerance  
cm3/1000 str. ± : 0.2  
Spread  
cm3/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 8.0  
Tolerance  
cm3/1000 str. ± : 1.0  
Spread  
cm3/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 525  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.4  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2400  
SV travel mm : 9.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.8  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 400  
SV travel mm : 2.4  
Tolerance mm + : 0.1  
Check  
tolerance mm + : 1.0  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 1000  
SV travel mm : 4.4  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.3  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2400  
Supply pump  
pressure bar : 9.9  
Tolerance bar + : 0.3

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750

Supply pump  
 pressure bar : 4.6  
 Tolerance bar + : 0.3

Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2400

Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 450

Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2

Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2550

Del. quantity  
 cm3/1000 strokes : 20.0  
 Tolerance  
 cm3/1000 str. + : 3.0

Check tolerance  
 cm3/1000s. + : 4.5

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2625

Del. quantity  
 cm3/1000 strokes : 13.5  
 Check tolerance  
 cm3/1000s. + : 6.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2950

Del. quantity  
 cm3/1000 strokes : 1.0  
 Tolerance  
 cm3/1000 str. + : 1.0

Check tolerance  
 cm3/1000s. + : 1.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400

Del. quantity  
 cm3/1000 strokes : 29.3  
 Tolerance  
 cm3/1000 str. + : 1.0

Check tolerance  
 cm3/1000s. + : 2.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750

Del. quantity  
 cm3/1000 strokes : 28.4  
 Tolerance  
 cm3/1000 str. + : 1.5

Check tolerance  
 cm3/1000s. + : 2.3

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000

Del. quantity  
 cm3/1000 strokes : 29.3  
 Tolerance  
 cm3/1000 str. + : 1.5

Check tolerance  
 cm3/1000s. + : 2.3

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 450

Del. quantity  
 cm3/1000 strokes : 31.5  
 Tolerance  
 cm3/1000 str. + : 2.0

Check tolerance  
 cm3/1000s. + : 2.8

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1500

Del. quantity  
 cm3/1000 strokes : 29.0  
 Tolerance  
 cm3/1000 str. + : 0.2

Check tolerance  
 cm3/1000s. + : 1.7

Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 425  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -10.6  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.8  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.1  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 0.1  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1200

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1200  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.4  
 Shutoff solenoid  
 Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 20.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 10.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

#### START TRANSITION

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 32.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 275  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 65.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

---

# ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,8  
Tolerance mm  $\pm$  :  $\pm 0,2$

## POTENTIOMETER SET

1. measurement  
voltage Volt : 1 = 3,4 V  
2. measurement  
voltage Volt : 2 = 1,7 V

## MICROSWITCH SET

mm : 1=ARF 12,0  
: 2=ARF 12,0

## CONTROL LEVER POSITION SET

Control lever  
position YA mm : 38,0..42,0

Control lever  
position YB mm : 57,3..66,3

---

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.10.95  
Test oil : ISO 4113

Part no. : 0 460 426 242  
Pump designation : VE6/12F1350R623

## Customer-spec. information

Customer : IVECO-FIAT  
Motor : 8060.45B.5100  
Power KW : 130.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 55  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000

Setting mm : 2.0  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 79.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 3.5  
Check tolerance  
cm3/1000S. : 5.0  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 58.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 24  
Check tolerance  
cm3/1000S. : 5.0

KSB/AFB Volt : 24

## IDLE SETTING

Rated speed rpm : 350  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 16.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 2.0  
 Shutoff solenoid  
 Volt : 24  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. : 5.0  
 KSB/AFB Volt : 24

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1500  
 Pressure hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 40.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 85.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 25.0  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 3.1  
 Tolerance mm +- : 0.3  
 Check  
 tolerance mm +- : 0.7  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24  
 Rated speed rpm : 900  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 0.8  
 Tolerance mm +- : 0.3  
 Check  
 tolerance mm +- : 0.7  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24  
 Setting point KSB  
 Rated speed rpm : 340  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 2.0  
 Tolerance mm +- : 0.2  
 Check  
 tolerance mm +- : 1.2  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 470  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 3.2  
 Tolerance mm +- : 0.6  
 Check  
 tolerance mm +- : 0.7  
 Shutoff solenoid  
 Volt : 24

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1350  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 8.7  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 600  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.4  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24  
 Rated speed rpm : 470  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.8  
 Tolerance bar + : 0.8  
 Shutoff solenoid  
 Volt : 24

#### OVERFLOW QUANTITY

Rated speed rpm : 1350  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 83.3  
 Tolerance  
 ccm/10s + : 27.7  
 Check tolerance  
 ccm/10s + : 27.7  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 600  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 40.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 6.0  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1450  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 58.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 8.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 10.0  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1600  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 600  
 Aneroid pressure  
 hPa : 350  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 68.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1350  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 73.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.5  
 Shutoff solenoid  
 Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000

Del. quantity	
cm <sup>3</sup> /1000 strokes :	76.5
Tolerance	
cm <sup>3</sup> /1000 str. + :	2.0
Check tolerance	
cm <sup>3</sup> /1000S. + :	3.5
Shutoff solenoid	
Volt :	24
KSB/AFB Volt :	24
Rated speed rpm :	600
Aneroid pressure	
hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	82.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	2.0
Check tolerance	
cm <sup>3</sup> /1000S. + :	3.5
Shutoff solenoid	
Volt :	24
KSB/AFB Volt :	24
Rated speed rpm :	700
Aneroid pressure	
hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	79.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	0.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	3.5
Shutoff solenoid	
Volt :	24

#### MECHANICAL SHUTOFF

Rated speed rpm :	1350
Aneroid pressure	
hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	1.5
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.5
Spread	
cm <sup>3</sup> /1000 strokes :	5.0
Check tolerance	
cm <sup>3</sup> /1000S. + :	1.5
Spread	
cm <sup>3</sup> /1000 strokes :	5.0
Shutoff solenoid	
Volt :	24
KSB/AFB Volt :	24

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm :	350
Del. quantity	
cm <sup>3</sup> /1000 strokes :	1.5
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	1.5

#### IDLE DELIVERY

Rated speed rpm :	425
Del. quantity	
cm <sup>3</sup> /1000 strokes :	1.5
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	1.5
Shutoff solenoid	
Volt :	24
KSB/AFB Volt :	24

#### START TRANSITION

Rated speed rpm :	250
Del. quantity	
cm <sup>3</sup> /1000 strokes :	50.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	17.0
Shutoff solenoid	
Volt :	24
KSB/AFB Volt :	24

Rated speed rpm :	130
Del. quantity	
cm <sup>3</sup> /1000 strokes :	85.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	25.0
Shutoff solenoid	
Volt :	24
KSB/AFB Volt :	24

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm :	3,6
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Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
MS1 dimension mm : 1,6  
Tolerance mm  $\pm$  :  $+0,15/-0,1$

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 37,9..39,9

Control lever  
position YB mm : 43,1..48,3

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 07.03.96  
Test oil : ISO 4113

Part no. : 0 460 424 117  
Pump designation : VE4/12F120GR636

## Customer-spec. information

Customer : MAN  
Motor : D 0324 LFL 01  
Power KW : 114.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1500

Setting mm : 2.2  
Tolerance mm ± : 0.2

KSB/AFB Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1500

Supply pump  
pressure bar : 6.7  
Tolerance bar ± : 0.3

KSB/AFB Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500

Del. quantity  
cm3/1000 strokes : 108.0  
Tolerance  
cm3/1000 str. ± : 0.5

Spread  
cm3/1000 strokes : 4.0  
Check tolerance  
cm3/1000S. : 4.5

KSB/AFB Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 61.0

Tolerance  
cm3/1000 str. ± : 0.5  
Check tolerance  
cm3/1000S. : 4.5

KSB/AFB Volt : 12

## IDLE SETTING

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 14.5

Tolerance  
cm3/1000 str. ± : 2.0  
Spread  
cm3/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000s. : 6.5

KSB/AFB Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1300  
Pressure hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0

KSB/AFB Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 135.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0

KSB/AFB Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500

SV travel mm : 4.0  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7

KSB/AFB Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1500

SV travel mm : 1.0  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7

KSB/AFB Volt : 12

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1500

SV travel mm : 4.9  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.4

KSB/AFB Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 8.6  
Tolerance bar +- : 0.3

KSB/AFB Volt : 12

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 5.2  
Tolerance bar +- : 0.3

KSB/AFB Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 550  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2

KSB/AFB Volt : 12

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1500  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6

KSB/AFB Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1300

Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 75.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 3.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 1340  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 12.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 1260  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 100.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 5.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 1370  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 KSB/AFB Volt : 12  
 Rated speed rpm : 550  
 Aneroid pressure  
 hPa : 400  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 81.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 3.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 1200  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 103.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 4.0

KSB/AFB Volt : 12  
 Rated speed rpm : 700  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 114.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 4.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 850  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 115.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 4.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 550  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 115.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 4.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 6.0  
 KSB/AFB Volt : 12  
 Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 108.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.5

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#### MECHANICAL SHUTOFF

Rated speed rpm : 1200  
 Aneroid pressure  
 hPa : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5



Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
KSB/AFB Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
KSB/AFB Volt : 12

#### START TRANSITION

Rated speed rpm : 430  
Del. quantity  
cm3/1000 strokes : 68.0  
Tolerance  
cm3/1000 str. + : 20.0  
KSB/AFB Volt : 12

Rated speed rpm : 330  
Del. quantity  
cm3/1000 strokes : 90.0  
Tolerance  
cm3/1000 str. + : 15.0  
KSB/AFB Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm + : +0,1  
Dimension KF mm : 6,4  
Tolerance mm + : +0,2  
MS1 dimension mm : 1,5  
Tolerance mm + : +0,15/-0,1

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 37,4..40,4

Control lever  
position YB mm : 35,4..40,6

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 08.03.96  
Test oil : ISO 4113

Part no. : 0 460 424 123  
Pump designation : VE4/12F1200R636-1

## Customer-spec. information

Customer : MAN  
Motor : D 0824 LFL 05  
Power KW : 114.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1500  
Setting mm : 2.1  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 24

## SUPPLY PUMP PRESSURE

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 7.3  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 110.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 4.0  
Check tolerance  
cm3/1000s. : 4.5  
Shutoff solenoid  
Volt : 24

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 62.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 24  
Check tolerance  
cm3/1000s. : 4.5

## IDLE SETTING

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 14.5  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 24

Spread  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 6.5

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1340  
Pressure hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 115.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 24

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1050  
Aneroid pressure  
hPa : 1500  
SV travel mm : 3.7  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1500

SV travel mm : 0.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1200

Aneroid pressure  
hPa : 1500  
SV travel mm : 4.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.4  
Shutoff solenoid  
Volt : 24

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 8.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 5.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

#### OVERFLOW QUANTITY

Rated speed rpm : 550  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2  
Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1500  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 24

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1340

Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1410  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1220  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 106.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1420  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1380  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 550  
Aneroid pressure  
hPa : 500

LDA/  
HBA stroke mm : 7.8  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 99.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 106.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 116.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 550  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 121.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 110.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 24

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400

Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 24

#### START TRANSITION

Rated speed rpm : 250  
 Del. quantity  
 cm3/1000 strokes : 30.0  
 Tolerance  
 cm3/1000 str. +- : 20.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 150  
 Del. quantity  
 cm3/1000 strokes : 110.0  
 Tolerance  
 cm3/1000 str. +- : 30.0  
 Shutoff solenoid  
 Volt : 24

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
 HBA stroke mm : 7.8  
 Dimension K mm : 5,7  
 Tolerance mm +- : +-0,1  
 Dimension KF mm : 6,4  
 Tolerance mm +- : +-0,2  
 Dimension MS mm : 1,2  
 Tolerance mm +- : +-0,2

#### CONTROL LEVER POSITION SET

Control lever  
 spacing  
 Xl mm : 12.60  
 Control lever  
 spacing  
 Xk mm : 21.00  
 Control lever  
 position YA mm : 37,4..40,4  
 Control lever  
 position YB mm : 41,9..47,1

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 31.08.95  
Test oil : ISO 4113

Part no. : 0 460 424 119  
Pump designation : VE4/12F1100R644

Customer-spec. information  
Customer : CASE  
Motor : 4 T-390/788  
Power KW : 70.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,8  
Outlet : A

## Prestroke

(as of UT) mm : 0,3  
Tolerance mm ± : ±0,02  
Check  
tolerance mm ± : ±0,04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 800  
Setting mm : 2.1  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 24

### SUPPLY PUMP PRESSURE

Rated speed rpm : 800  
Supply pump  
pressure bar : 6.9  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 900  
Del. quantity  
cm3/1000 strokes : 68.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 4.0  
Shutoff solenoid  
Volt : 24

### IDLE SETTING

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 9.0  
Tolerance  
cm3/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 24  
Spread  
cm3/1000 strokes : 5.5  
Check tolerance  
cm3/1000S. : 7.0

# FULL-LOAD SPEED REGULATION

Rated speed rpm : 1160  
Del. quantity  
cm3/1000 strokes : 42.0  
Tolerance  
cm3/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 24

# STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm3/1000 strokes : 90.0  
Tolerance  
cm3/1000 str. + : 20.0  
Shutoff solenoid  
Volt : 24

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100  
SV travel mm : 3.8  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
SV travel mm : 0.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1100  
Supply pump  
pressure bar : 8.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Supply pump  
pressure bar : 5.6  
Tolerance bar + : 0.3

Shutoff solenoid  
Volt : 24

## OVERFLOW QUANTITY

Rated speed rpm : 1100  
Overflow quantity  
ccm/10s : 82.7  
Tolerance  
ccm/10s + : 27.7

Check tolerance  
ccm/10s + : 27.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 24

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1160  
Del. quantity  
cm3/1000 strokes : 42.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000s. + : 6.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1200  
Del. quantity  
cm3/1000 strokes : 32.5  
Check tolerance  
cm3/1000s. + : 8.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1240  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000s. + : 1.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1100  
Del. quantity  
cm3/1000 strokes : 67.0

Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 750  
Del. quantity  
cm3/1000 strokes : 70.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 32.0  
Tolerance  
cm3/1000 str. +- : 4.0  
Check tolerance  
cm3/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 900  
Del. quantity  
cm3/1000 strokes : 68.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 24

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5

Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 2.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 2.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 350  
Del. quantity  
cm3/1000 strokes : 18.0  
Tolerance  
cm3/1000 str. +- : 8.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 15.0  
Tolerance  
cm3/1000 str. +- : 8.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 12.0  
Tolerance  
cm3/1000 str. +- : 6.0  
Shutoff solenoid  
Volt : 24

START TRANSITION

Rated speed rpm : 300  
Del. quantity  
cm3/1000 strokes : 72.0  
Tolerance  
cm3/1000 str. +- : 8.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 130



Del. quantity  
cm<sup>3</sup>/1000 strokes : 98.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 25.0  
Shutoff solenoid  
Volt : 24

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm : 5,2  
Tolerance mm +- : +-0,2  
MS1 dimension mm : 1,5  
Tolerance mm +- : +0,15/-0,1

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 23.06.95  
Test oil : ISO 4113

Part no. : 0 460 484 103  
Pump designation : VE4/8F2300R652

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 646  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.4  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0

Tolerance  
 cm3/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
 Del. quantity  
 cm3/1000 strokes : 24.5  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm3/1000 strokes : 55.0  
 Tolerance  
 cm3/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -7.0  
 Tolerance  
 cm3/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -0.2  
 Tolerance  
 cm3/1000 str. + : 0.1  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -0.7  
 Tolerance  
 cm3/1000 str. + : 0.1  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 6.1  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.6  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Supply pump  
 pressure bar : 3.6  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2250  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6  
 Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.1  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.5

Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.9  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

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#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

D03

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,4  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 16,2..17,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3

Control lever  
position YB mm : 64,1..76,4

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 23.06.95  
Test oil : ISO 4113  
  
Part no. : 0 460 484 104  
Pump designation : VE4/8F2300R652-1

## Customer-spec. information

Customer : RENAULT  
Motor : F8Q - 646  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,0  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.4  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 9.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 2.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 24.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 55.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 15.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -7.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.0  
 Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.1  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.7  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.1  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 6.1  
 Tolerance mm +- : 0.4  
 Check  
 tolerance mm +- : 0.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
 Tolerance mm +- : 0.4  
 Check  
 tolerance mm +- : 0.6  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Supply pump  
 pressure bar : 3.6  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2250  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s +- : 41.6  
 Check tolerance  
 ccm/10s +- : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600

Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0



---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,4  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,2

Control lever  
position YB mm : 64,1..76,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 19.10.95  
Test oil : ISO 4113

Part no. : 0 460 426 229  
Pump designation : VE6/12F135OR674

## Customer-spec. information

Customer : IVECO-FIAT  
Motor : 8060.45.5000  
Power KW : 105.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 55  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000

Setting mm : 1.4  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 650  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 62.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 3.5  
Check tolerance  
cm3/1000S. : 5.0  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Check tolerance  
cm3/1000S. : 5.0

## IDLE SETTING

Rated speed rpm : 350  
Del. quantity  
cm3/1000 strokes : 16.5  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 24  
Spread  
cm3/1000 strokes : 4.0

Check tolerance  
cm<sup>3</sup>/1000S. : 5.0

KSB/AFB Volt : 24

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1550  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 58.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000

SV travel mm : 2.6  
Tolerance mm + : 0.3  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000

SV travel mm : 3.3  
Tolerance mm + : 0.3

Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24  
Setting point KSB  
Rated speed rpm : 340  
Aneroid pressure  
hPa : 1000

SV travel mm : 2.0  
Tolerance mm + : 0.2  
Check  
tolerance mm + : 0.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 470  
Aneroid pressure  
hPa : 1000

SV travel mm : 3.2  
Tolerance mm + : 0.6  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 3.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

##### OVERFLOW QUANTITY

Rated speed rpm : 1350  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1550  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 39.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 10.0  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1600  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 1350  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance

cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 63.5  
Tolerance

cm<sup>3</sup>/1000 str. + : 2.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 650  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 62.5  
Tolerance

cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Aneroid pressure  
hPa : 80

Tolerance

cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance

cm<sup>3</sup>/1000S. + : 0.5

Check tolerance

cm<sup>3</sup>/1000S. + : 0.5

Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 220  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 425  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24  
 Rated speed rpm : 300

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 41.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 5.0  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24

#### START TRANSITION

Rated speed rpm : 230  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 60.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 10.0  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24

Rated speed rpm : 140  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 100.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 25.0  
 Shutoff solenoid  
 Volt : 24  
 KSB/AFB Volt : 24

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,6  
 Tolerance mm + : +0,1  
 Dimension KF mm : 6,0  
 Tolerance mm + : +0,2  
 MS1 dimension mm : 1,3  
 Tolerance mm + : +0,15/-0,1  
 KSB travel mm : 10,0

#### CONTROL LEVER POSITION SET

Control lever  
 position YA mm : 37,9..39,9

Control lever  
position YB mm : 42,1..47,3

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and  
adjustment instructions.  
See microcard(s) W400/...

Edition : 27.09.93  
Test oil : ISO 4113

Part no. : 0 460 494 079  
Pump designation : VE4/9F2250R84

Customer-spec. information  
Customer : PSA  
Motor : XD3 505D

## TEST BENCH REQUIREMENTS

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holder  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 4.0  
Tolerance mm + : 0.2

Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1500  
Del. quantity  
cm3/1000 strokes : 38.0  
Tolerance  
cm3/1000 str. + : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## IDLE SETTING

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 8.0  
Tolerance  
cm3/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000s. : 3.0

## FULL-LOAD SPEED REGULATION

Rated speed rpm : 2325  
Del. quantity  
cm3/1000 strokes : 28.5  
Tolerance  
cm3/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

## STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm3/1000 strokes : 60.0  
Tolerance  
cm3/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

# LOAD-DEPENDENT START OF DELIVERY SETTING

## DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

## PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 8.6  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 1.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 1.0  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Supply pump  
pressure bar : 3.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s + : 20.8

Check tolerance  
ccm/10s + : 20.8  
Shutoff solenoid  
Volt : 12

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 28.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 8.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 8.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2550



Del. quantity  
cm3/1000 strokes : 1.0  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2200  
Del. quantity  
cm3/1000 strokes : 40.0  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 39.5  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 4.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 4.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1500  
Del. quantity  
cm3/1000 strokes : 38.0  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 3.5  
Shutoff solenoid  
Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5

Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm3/1000 strokes : 1.0  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 1.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 350  
Del. quantity  
cm3/1000 strokes : 28.0  
Tolerance  
cm3/1000 str. + : 4.0  
Check tolerance  
cm3/1000S. + : 8.0  
Shutoff solenoid  
Volt : 12

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -20.0  
Tolerance  
cm3/1000 str. + : 5.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 65.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 20.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : K1  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,5  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,1  
Tolerance mm ± : ±0,2  
TLA travel mm : 12,7

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 19,1..23,1

Control lever  
position YB mm : 66,5..83,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.03.96  
Test oil : ISO 4113  
  
Part no. : 0 460 414 118  
Pump designation : VE4/11F2250L619

Customer-spec. information  
Customer : ROVER  
Motor : TCI-em  
Power KW : 63.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 55  
Tolerance °C ± : 1  
  
Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 116

Opening pressure  
bar : 207  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,55  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500  
  
Setting mm : 7.4  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 7.0  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 60.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 3.0  
Check tolerance  
cm3/1000S. : 4.0  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 700  
Del. quantity  
cm3/1000 strokes : 42.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 375

Del. quantity  
cm<sup>3</sup>/1000 strokes : 6.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.5

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2580  
Pressure hPa : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 96.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 2000  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12

#### SETTING GRAD. STARTING FUEL DELIVERY FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1500  
SV travel mm : 8.7  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.9  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1500

SV travel mm : 6.6  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.9  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1500

SV travel mm : 0.3  
Tolerance mm +- : 0.3  
Check  
tolerance mm +- : 0.3  
Shutoff solenoid  
Volt : 12

Timing device  
solenoid Volt : 100

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 7.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1500  
Supply pump  
pressure bar : 6.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 700

Aneroid pressure  
hPa : 1500  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 55.5

Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1500  
Overflow quantity  
ccm/10s : 138.8  
Tolerance  
ccm/10s +- : 55.5

Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2580  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 20.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2450  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 46.0  
Tolerance  
cm3/1000 str. +- : 4.0  
Check tolerance  
cm3/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2670  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5

Shutoff solenoid  
Volt : 12  
Rated speed rpm : 1000  
Aneroid pressure  
hPa : 500

LDA/  
HBA stroke mm : 6.6  
Del. quantity  
cm3/1000 strokes : 54.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 3.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 60.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 3.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 63.0  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1500  
Del. quantity  
cm3/1000 strokes : 60.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.8  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 375

Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 480  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 320  
Del. quantity  
cm3/1000 strokes : 45.0  
Tolerance  
cm3/1000 str. +- : 20.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 180  
Del. quantity  
cm3/1000 strokes : 110.0  
Tolerance  
cm3/1000 str. +- : 25.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 6.6  
Dimension K mm : 5,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,7  
Tolerance mm +- : +-0,2  
MS1 dimension mm : 1,5  
Tolerance mm +- : +0,15/-0,1

#### MICROSWITCH SET

mm : GST 76,9

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 35,8..39,8

Control lever  
position YB mm : 48,1..57,9

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 26.03.96  
Test oil : ISO 4113

Part no. : 0 460 414 137  
Pump designation : VE4/11F1250L678

Customer-spec. information  
Customer : IVECO-FIAT  
Motor : 8045.25K.214  
Power KW : 69.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holder  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 950  
Aneroid pressure  
hPa : 1000  
Setting mm : 2.8  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 950  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.3  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 74.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 3.5  
Check tolerance  
cm<sup>3</sup>/1000s. : 4.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000s. : 4.0

## IDLE SETTING

Rated speed rpm : 335  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

Spread  
cm3/1000 strokes : 3.5  
Check tolerance  
cm3/1000S. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1330  
Pressure hPa : 1000  
Del. quantity  
cm3/1000 strokes : 56.0  
Tolerance  
cm3/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm3/1000 strokes : 100.0  
Tolerance  
cm3/1000 str. + : 20.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000  
SV travel mm : 4.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 8.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.4  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 350  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1330  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 56.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 8.0  
Shutoff solenoid  
Volt : 12



Rated speed rpm : 1360  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 38.0  
 Check tolerance  
 cm3/1000S. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1470  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 250  
 Del. quantity  
 cm3/1000 strokes : 63.5  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 64.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 3.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 350  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 78.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 3.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750

Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 74.5  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 335  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 335  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 250  
 Del. quantity  
 cm3/1000 strokes : 28.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 58.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 130  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 107.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 6,4  
Tolerance mm + : +0,2  
Dimension MS mm : 1,1  
Tolerance mm + : +0,2

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 34,9..36,9

Control lever  
position YB mm : 47,9..52,5

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 15.04.96  
Test oil : ISO 4113

Part no. : 0 460 414 116  
Pump designation : VE4/11F1900R444-1

## Customer-spec. information

Customer : IVECO-SOFIM  
Motor : 8140.47.3700  
Power KW : 85.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 027

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Setting mm : 1.8  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 56.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 4.0  
Check tolerance  
cm3/1000s. : 4.5  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 27.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000s. : 4.5

## IDLE SETTING

Rated speed rpm : 325  
Del. quantity  
cm3/1000 strokes : 17.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

Spread  
 cm<sup>3</sup>/1000 strokes : 6.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. : 6.5

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2100  
 Pressure hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 75.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 25.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1400  
 Pressure hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -26.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.1  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1400

Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.8  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.1  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1600  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 4.3  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1100  
 Aneroid pressure  
 hPa : 1000

SV travel mm : 1.1  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1900  
 Aneroid pressure  
 hPa : 1000

SV travel mm : 4.9  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.6  
 Shutoff solenoid  
 Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1900  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 8.7  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 700

Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 1900  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 152.7  
Tolerance  
ccm/10s + : 27.7

Check tolerance  
ccm/10s + : 27.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 116.6  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2200  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 18.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2290  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 400

LDA/  
HBA stroke mm : 6.2  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 44.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1900  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 57.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 58.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5

Shutoff solenoid  
 Volt : 12  
 Rated speed rpm : 700  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 57.0  
 Tolerance  
 cm3/1000 str. + : 4.5  
 Check tolerance  
 cm3/1000S. + : 5.5  
 Shutoff solenoid  
 Volt : 12  
 Rated speed rpm : 1400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 56.0  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 3.5  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 450

Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : -28.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : -0.8  
 Tolerance  
 cm3/1000 str. + : 0.1  
 Check tolerance  
 cm3/1000S. + : 0.1  
 Shutoff solenoid  
 Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1000  
Tolerance mm  $\pm$  : 0.2  
Check  
tolerance mm  $\pm$  : 0.4  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 8.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 80.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 25.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 6.2  
Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 8,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
MS1 dimension mm : 1,6  
Tolerance mm  $\pm$  :  $\pm 0,15/-0,1$   
KSB travel mm : 7,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 37,9..39,9

Control lever  
position YB mm : 43,7..48,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 15.04.96  
Test oil : ISO 4113

Part no. : 0 460 484 074  
Pump designation : VE4/8F2300R598

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 620  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 9.5  
Tolerance  
cm3/1000 str. ± : 2.0  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 9.0



Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

## INJECTION-PUMP TEST SPECIFICATIONS

### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.2  
Check  
tolerance mm +- : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 14,7..15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3

Control lever  
position YB mm : 67,1..69,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 15.04.96  
Test oil : ISO 4113

Part no. : 0 460 484 075  
Pump designation : VE4/8F2300R598-1

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 620 CA  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 683 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.2  
Check  
tolerance mm +- : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 14,7..15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3

Control lever  
position YB mm : 67,1..79,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 15.04.96  
Test oil : ISO 4113  
  
Part no. : 0 460 484 087  
Pump designation : VE4/8F2300R598-2

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 620  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.7  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 9.5  
Tolerance  
cm3/1000 str. +- : 2.0  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 9.0



Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm + : 0.2  
Check  
tolerance mm + : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

E13

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,4  
Tolerance mm + : +0,2  
Dimension MS mm : 1,3  
Tolerance mm + : +0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 14,7..15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3

Control lever  
position YB mm : 67,1..79,9

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 15.04.96  
Test oil : ISO 4113

Part no. : 0 460 484 088  
Pump designation : VE4/8F2300R598-3

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 620 CA  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1  
  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 9.5  
Tolerance  
cm3/1000 str. ± : 2.0  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

## INJECTION-PUMP TEST SPECIFICATIONS

### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000s. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000s. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000s. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000s. + : 2.3  
Shutoff solenoid  
Volt : 12

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#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000s. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000s. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

E17

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,4  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: 14,7...15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3...34,3

Control lever  
position YB mm : 67,1...79,9

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 16.04.96  
Test oil : ISO 4113  
Part no. : 0 460 484 114  
Pump designation : VE4/8F2300R598-4

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 620  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 9.5  
Tolerance  
cm3/1000 str. ± : 2.0  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 9.0



Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

## INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

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#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.2  
Check  
tolerance mm +- : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

E21

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm +- : 0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: 14,7..15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3  
Control lever  
position YB mm : 67,1..79,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 16.04.96

Test oil : ISC 4113

Part no. : 0 460 484 115

Pump designation : VE4/8F2300R598-5

## Customer-spec. information

Customer : RENAULT

Motor : F8Q - 620 CA

Power kW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return

temperature °C : 45

Tolerance °C ± : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar ± : 0.05

Test nozzle holde

assembly : 1 688 901 022

Opening pressure

bar : 130

Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.7

Tolerance mm ± : 0.2

Shutoff solenoid

Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Supply pump

pressure bar : 5.5

Tolerance bar ± : 0.3

Shutoff solenoid

Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250

Del. quantity

cm<sup>3</sup>/1000 strokes : 31.5

Tolerance

cm<sup>3</sup>/1000 str. ± : 0.5

Spread

cm<sup>3</sup>/1000 strokes : 2.5

Shutoff solenoid

Volt : 12

## HOUSING-FIXED IDLE SPRING

### RESIDUAL QUANTITY SETTING

Rated speed rpm : 500

Del. quantity

cm<sup>3</sup>/1000 strokes : 3.0

Tolerance

cm<sup>3</sup>/1000 str. ± : 2.0

Shutoff solenoid

Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410

Del. quantity

cm<sup>3</sup>/1000 strokes : 9.5

Tolerance

cm<sup>3</sup>/1000 str. ± : 2.0

Spread

cm<sup>3</sup>/1000 strokes : 2.5

Shutoff solenoid

Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500

Del. quantity

cm<sup>3</sup>/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

## INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -9.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000s. + : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -0.7  
Tolerance  
cm3/1000 str. + : 0.1  
Check tolerance  
cm3/1000s. + : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 5.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000s. + : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm + : 0.2  
Check  
tolerance mm + : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm3/1000 strokes : 35.0  
Tolerance  
cm3/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm3/1000 strokes : 60.0  
Tolerance  
cm3/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,4  
Tolerance mm + : +0,2  
Dimension MS mm : 1,3  
Tolerance mm + : +0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: 14,7...15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3  
Control lever  
position YB mm : 67,1..79,9

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 16.04.96  
Test oil : ISO 4113  
  
Part no. : 0 460 484 116  
Pump designation : VE4/8F2300R598-6

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 620 DDS  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1  
  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.7  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0



Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.6  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6  
Check tolerance  
ccm/10s ± : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s ± : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

F01

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,4  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 14,7..15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3

Control lever  
position YB mm : 67,1..79,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 16.04.96  
Test oil : ISO 4113

Part no. : 0 460 484 117  
Pump designation : VE4/8F2300R598-7

## Customer-spec. information

Customer : RENAULT  
Motor : F8Q - 620 CA DDS  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

### Calibrating-oil return

temperature °C : 45  
Tolerance °C +- : 1

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm +- : 0.2  
Shutoff solenoid Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 5.5  
Tolerance bar +- : 0.3  
Shutoff solenoid Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm3/1000 strokes : 31.5  
Tolerance cm3/1000 str. +- : 0.5  
Spread cm3/1000 strokes : 2.5  
Shutoff solenoid Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity cm3/1000 strokes : 3.0  
Tolerance cm3/1000 str. +- : 2.0  
Shutoff solenoid Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity cm3/1000 strokes : 9.5  
Tolerance cm3/1000 str. +- : 2.0  
Spread cm3/1000 strokes : 2.5  
Shutoff solenoid Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity cm3/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600

SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 7.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 24.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 9.5  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. + : 2.5  
Check tolerance  
cm3/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm3/1000 strokes : 31.9  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. + : 1.5  
Spread  
cm3/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -9.5  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 2.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -0.7  
Tolerance  
cm3/1000 str. +- : 0.1  
Check tolerance  
cm3/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 5.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.2  
Check  
tolerance mm +- : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm3/1000 strokes : 35.0  
Tolerance  
cm3/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

F05

Rated speed rpm : 210  
Del. quantity  
cm3/1000 strokes : 60.0  
Tolerance  
cm3/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 14,7..15,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 30,3..34,3

Control lever  
position YB mm : 67,1..79,9

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 04.04.96  
Test oil : ISO 4113

Part no. : 0 460 494 357  
Pump designation : VE4/9F2400R581

## Customer-spec. information

Customer : RENAULT  
Motor : G8T - 752  
Power KW : 59.0

## TEST BENCH REQUIREMENTS

### Calibrating-oil return

temperature °C : 45  
Tolerance °C ± : 1

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

F06

Plunger stroke mm : 1,0  
Tolerance mm ± : ±0,02  
Outlet : C

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 2.5  
Tolerance mm ± : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 6.2  
Tolerance bar ± : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm<sup>3</sup>/1000 strokes : 37.4  
Tolerance cm<sup>3</sup>/1000 str. ± : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450  
Del. quantity cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid Volt : 12

### IDLE DELIVERY

Rated speed rpm : 385  
Del. quantity cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance cm<sup>3</sup>/1000 str. ± : 2.0  
Spread cm<sup>3</sup>/1000 strokes : 2.5



Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 435  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.1  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000

SV travel mm : 1.0  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.0  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 8.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 4.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2300  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 35.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2800  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 2.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2300  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 41.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0

Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.7  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 40.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 36.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.4  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.3  
 Shutoff solenoid  
 Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 385  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

# FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 385  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000s. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

## CHECKING LOAD-DEPENDENT START OF DELIVERY

### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -9.4  
 Tolerance  
 cm3/1000 str. + : 2.0  
 Check tolerance  
 cm3/1000s. + : 2.0  
 Shutoff solenoid  
 Volt : 12

### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -0.8  
 Tolerance  
 cm3/1000 str. + : 0.1  
 Check tolerance  
 cm3/1000s. + : 0.1  
 Shutoff solenoid  
 Volt : 12

### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Tolerance mm + : 0.2  
 Check  
 tolerance mm + : 0.3  
 Shutoff solenoid  
 Volt : 12

## EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 23.0  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000s. + : 2.5  
 Shutoff solenoid  
 Volt : 12

## START TRANSITION

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 30.0  
 Tolerance  
 cm3/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 200  
 Del. quantity  
 cm3/1000 strokes : 70.0  
 Tolerance  
 cm3/1000 str. + : 25.0  
 Shutoff solenoid  
 Volt : 12

## ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
 Tolerance mm + : +0,1  
 Dimension KF mm : 6,0  
 Tolerance mm + : +0,2  
 Dimension MS mm : 0,8  
 Tolerance mm + : +0,2

## MICROSWITCH SET

mm : 0,8...3,0  
 : ARF 12,0

## CONTROL LEVER POSITION SET

Control lever  
position YA mm : 37,2..41,2

Control lever  
position YB mm : 61,3..69,7

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 04.04.96  
Test oil : ISO 4113  
Part no. : 0 460 494 358  
Pump designation : VE4/9F2400R581-1

Customer-spec. information  
Customer : RENAULT  
Motor : G8T - 752 CA  
Power KW : 59.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holder  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

F11

Plunger stroke mm : 1,0  
Tolerance mm +- : +-0,02  
Outlet : C

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 2.5  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 6.2  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 37.4  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 5.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 385  
Del. quantity  
cm3/1000 strokes : 14.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Spread  
cm3/1000 strokes : 2.5

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 435  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.1  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
SV travel mm : 1.0  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
SV travel mm : 1.0  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 8.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 4.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2300  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s +- : 41.6

Check tolerance  
 ccm/10s +- : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2

Check tolerance  
 ccm/10s +- : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2600  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 35.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 4.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2800  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 2.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2300  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 41.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.0

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.7  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 40.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 36.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.4  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 385  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

# FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 385  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

## CHECKING LOAD-DEPENDENT START OF DELIVERY

### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -9.4  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 2.0  
 Shutoff solenoid  
 Volt : 12

### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -0.8  
 Tolerance  
 cm3/1000 str. +- : 0.1  
 Check tolerance  
 cm3/1000S. +- : 0.1  
 Shutoff solenoid  
 Volt : 12

### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Tolerance mm +- : 0.2  
 Check  
 tolerance mm +- : 0.3  
 Shutoff solenoid  
 Volt : 12

## EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 23.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

## START TRANSITION

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 30.0  
 Tolerance  
 cm3/1000 str. +- : 15.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 200  
 Del. quantity  
 cm3/1000 strokes : 70.0  
 Tolerance  
 cm3/1000 str. +- : 25.0  
 Shutoff solenoid  
 Volt : 12

## ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
 Tolerance mm +- : +-0,1  
 Dimension KF mm : 6,0  
 Tolerance mm +- : +-0,2  
 Dimension MS mm : 0,8  
 Tolerance mm +- : +-0,2

## MICROSWITCH SET

mm : 0,8...3,0  
 : ARF 12,0

## CONTROL LEVER POSITION SET



Control lever  
position YA mm : 37,2..41,2

Control lever  
position YB mm : 61,3..69,7

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 29.04.96  
Test oil : ISO 4113

Part no. : 0 460 404 086  
Pump designation : VE4/10F2100L414-2

## Customer-spec. information

Customer : VM  
Motor : 425 SLTRS  
Power KW : 77.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Setting mm : 2.2  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 59.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 3.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 700  
Del. quantity  
cm3/1000 strokes : 43.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## IDLE SETTING

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 15.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2300  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 65.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1500  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -25.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500

Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.9  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
SV travel mm : 4.6  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.1  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.6  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700

Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 3.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2300  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2550  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 500

LDA/  
HBA stroke mm : 5.7  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 57.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2100  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 58.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 700  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 59.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.0  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 600  
 Del. quantity  
 cm3/1000 strokes : 2.5  
 Tolerance  
 cm3/1000 str. + : 2.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. + : 2.5  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : -30.5  
 Tolerance  
 cm3/1000 str. + : 3.0

Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : -0.9  
 Tolerance  
 cm3/1000 str. + : 0.1  
 Check tolerance  
 cm3/1000S. + : 0.1  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500  
 Aneroid pressure  
 hPa : 1000  
 Tolerance mm + : 0.3  
 Check  
 tolerance mm + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 43.5  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

#### START TRANSITION

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 42.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5.7  
Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 0,8  
Tolerance mm +- : +-0,2  
TLA travel mm : 12,7

MICROSWITCH  
SET

: ARF 12,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 38,8..40,8

Control lever  
position YB mm : 38,6..48,4

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 29.04.96  
Test oil : ISO 4113

Part no. : 0 460 494 437  
Pump designation : VE4/9F2250R593-6

## Customer-spec. information

Customer : RENAULT  
Motor : G8T - 760  
Power KW : 81.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test Lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 2.8  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.4  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 58.7  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 43.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 450  
Del. quantity  
cm3/1000 strokes : 7.0  
Tolerance  
cm3/1000 str. ± : 2.0

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -8.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0

Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
SV travel mm : 5.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Aneroid pressure  
hPa : 1000

SV travel mm : 2.7  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12



KSB/AFB Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 3.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2  
Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2525  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2600  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 300

LDA/  
HBA stroke mm : 7.3  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 56.7  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 59.6  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance	
cm <sup>3</sup> /1000S. + :	2.3
Shutoff solenoid	
Volt :	12
Rated speed rpm :	500
Aneroid pressure	
hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	57.2
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	2.3
Shutoff solenoid	
Volt :	12
Rated speed rpm :	1250
Aneroid pressure	
hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	58.7
Tolerance	
cm <sup>3</sup> /1000 str. + :	0.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	2.3
Shutoff solenoid	
Volt :	12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm :	350
Del. quantity	
cm <sup>3</sup> /1000 strokes :	1.5
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	1.5
Spread	
cm <sup>3</sup> /1000 strokes :	5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm :	350
Del. quantity	
cm <sup>3</sup> /1000 strokes :	1.5
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.5
Spread	
cm <sup>3</sup> /1000 strokes :	5.0
Check tolerance	
cm <sup>3</sup> /1000S. + :	1.5
Spread	
cm <sup>3</sup> /1000 strokes :	5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm :	1250
Del. quantity	
cm <sup>3</sup> /1000 strokes :	-11.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	2.5
Check tolerance	
cm <sup>3</sup> /1000S. + :	2.5
Shutoff solenoid	
Volt :	12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm :	1250
Del. quantity	
cm <sup>3</sup> /1000 strokes :	-0.7
Tolerance	
cm <sup>3</sup> /1000 str. + :	0.1
Check tolerance	
cm <sup>3</sup> /1000S. + :	0.1
Shutoff solenoid	
Volt :	12

DELIVERY DIFFERENCE

Rated speed rpm :	1250
Del. quantity	
cm <sup>3</sup> /1000 strokes :	5.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	3.0
Check tolerance	
cm <sup>3</sup> /1000S. + :	3.0
Shutoff solenoid	
Volt :	12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm :	1250
Tolerance mm + :	0.2
Check	
tolerance mm + :	0.3
Shutoff solenoid	
Volt :	12

START TRANSITION

Rated speed rpm :	300
Del. quantity	
cm <sup>3</sup> /1000 strokes :	37.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	10.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7.3  
Dimension K mm : 3,7  
Tolerance mm + : +0,1  
Dimension KF mm : 6,0  
Tolerance mm + : +0,2  
Dimension MS mm : 0,9  
Tolerance mm + : +0,2

#### POTENTIOMETER SET

1. measurement  
voltage Volt : 5,0  
1. measurement  
voltage Volt : 4,5

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 05.02.96  
Test oil : ISO 4113

Part no. : 0 460 494 354  
Pump designation : VE4/9F2150R577

Customer-spec. information  
Customer : NISSAN-MISA  
Motor : GX-3  
Power KW : 53.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1200  
Setting mm : 3.2  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1200  
Supply pump  
pressure bar : 5.9  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 2150  
Del. quantity  
cm3/1000 strokes : 44.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## IDLE SETTING

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000s. : 3.0

## FULL-LOAD SPEED REGULATION

Rated speed rpm : 2500  
Del. quantity  
cm3/1000 strokes : 15.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 12

## STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2150  
  
SV travel mm : 9.2  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
  
SV travel mm : 1.2  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2150  
Supply pump  
pressure bar : 8.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Supply pump  
pressure bar : 5.0  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 2150  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6

Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 12

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 15.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 4.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.3  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 4.0  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 5.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.5  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 42.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.2

Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1800  
 Del. quantity  
 cm3/1000 strokes : 44.3  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Del. quantity  
 cm3/1000 strokes : 41.0  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Del. quantity  
 cm3/1000 strokes : 44.5  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 1.3  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 375  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5

Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 800  
 Del. quantity  
 cm3/1000 strokes : 2.5  
 Tolerance  
 cm3/1000 str. + : 2.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

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EXHAUST-GAS RECIRCULATION

Del. quantity  
 cm3/1000 strokes : 0.80  
 Tolerance  
 cm3/1000 str. + : 0.02  
 Check tolerance  
 cm3/1000S. + : 0.10

START TRANSITION

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 45.0  
 Tolerance  
 cm3/1000 str. + : 20.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 270  
 Del. quantity  
 cm3/1000 strokes : 70.0  
 Tolerance  
 cm3/1000 str. + : 20.0

Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 5,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,2  
Tolerance mm  $\pm$  :  $\pm 0,2$   
KSB travel mm : 4,3  
TLA travel mm : 6,5

POTENTIOMETER  
SET

1. measurement  
voltage Volt : 5,0  
1. measurement  
voltage Volt : 0,8

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 35,1..39,1

Control lever  
position YB mm : 56,9..68,1

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 06.02.96  
Test oil : ISO 4113  
Part no. : 0 460 494 355  
Pump designation : VE4/9F2150R577-1

Customer-spec. information  
Customer : NISSAN-MISA  
Motor : GX-3  
Power KW : 53.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1200  
Setting mm : 3.2  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1200  
Supply pump  
pressure bar : 5.9  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 2150  
Del. quantity  
cm3/1000 strokes : 44.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## IDLE SETTING

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000s. : 3.0

## FULL-LOAD SPEED REGULATION

Rated speed rpm : 2500  
Del. quantity  
cm3/1000 strokes : 15.0  
Tolerance  
cm3/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

## STARTING FUEL DELIVERY

Rated speed rpm : 100



Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2150  
SV travel mm : 9.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2150  
Supply pump  
pressure bar : 8.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Supply pump  
pressure bar : 5.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 2150  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6

Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 15.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 4.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 4.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 5.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 42.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.2

Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1800  
 Del. quantity  
 cm3/1000 strokes : 44.3  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Del. quantity  
 cm3/1000 strokes : 41.0  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Del. quantity  
 cm3/1000 strokes : 44.5  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 1.3  
 Shutoff solenoid  
 Volt : 12

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ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 375  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5

Spread  
 cm3/1000 strokes : 5.0  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Spread  
 cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 800  
 Del. quantity  
 cm3/1000 strokes : 2.5  
 Tolerance  
 cm3/1000 str. + : 2.5  
 Check tolerance  
 cm3/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

START TRANSITION

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 45.0  
 Tolerance  
 cm3/1000 str. + : 20.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 270  
 Del. quantity  
 cm3/1000 strokes : 70.0  
 Tolerance  
 cm3/1000 str. + : 20.0  
 Shutoff solenoid  
 Volt : 12

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ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
 Tolerance mm + : +0,1  
 Dimension KF mm : 5,4  
 Tolerance mm + : +0,2

Dimension MS mm : 1,2  
Tolerance mm  $\pm$  :  $\pm 0,2$   
KSB travel mm : 4,3  
TLA travel mm : 6,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 35,1..39,1

Control lever  
position YB mm : 56,9..68,1

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 08.02.95  
Test oil : ISO 4113

Part no. : 0 460 494 385  
Pump designation : VE4/9F2150R281-2

Customer-spec. information  
Customer : PSA  
Motor : XUD11ATE-Y BVA  
Power kW : 78.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 2.9  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.3  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 61.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Check tolerance  
cm3/1000S. : 2.5  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 42.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 2.5  
Check tolerance  
cm3/1000S. : 2.5

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550

Del. quantity	
cm <sup>3</sup> /1000 strokes :	3.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	0.5
Shutoff solenoid	
Volt :	12

#### IDLE DELIVERY

Rated speed rpm :	325
Del. quantity	
cm <sup>3</sup> /1000 strokes :	13.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.0
Spread	
cm <sup>3</sup> /1000 strokes :	2.0
Shutoff solenoid	
Volt :	12

#### HIGH IDLE SETTING

Rated speed rpm :	450
Del. quantity	
cm <sup>3</sup> /1000 strokes :	12.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.0
Shutoff solenoid	
Volt :	12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm :	2250
Pressure hPa :	1000
Del. quantity	
cm <sup>3</sup> /1000 strokes :	52.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	3.0
Shutoff solenoid	
Volt :	12

#### STARTING FUEL DELIVERY

Rated speed rpm :	100
Del. quantity	
cm <sup>3</sup> /1000 strokes :	75.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	5.0
Shutoff solenoid	
Volt :	12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm :	200
Del. quantity	
cm <sup>3</sup> /1000 strokes :	77.0
Tolerance	
cm <sup>3</sup> /1000 str. + :	1.0
Shutoff solenoid	
Volt :	12

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm :	2000
Aneroid pressure	
hPa :	1000
SV travel mm :	6.9
Tolerance mm + :	0.3
Check	
tolerance mm + :	0.7
Shutoff solenoid	
Volt :	12

Rated speed rpm :	1000
Aneroid pressure	
hPa :	1000
SV travel mm :	1.6
Tolerance mm + :	0.3
Check	
tolerance mm + :	0.7
Shutoff solenoid	
Volt :	12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm :	2000
Aneroid pressure	
hPa :	1000
Supply pump	
pressure bar :	7.4
Tolerance bar + :	0.3
Shutoff solenoid	
Volt :	12

Rated speed rpm :	1000
Aneroid pressure	
hPa :	1000
Supply pump	
pressure bar :	4.6
Tolerance bar + :	0.3
Shutoff solenoid	
Volt :	12

#### OVERFLOW QUANTITY

Rated speed rpm :	2000
Overflow quantity	
ccm/10s :	97.2
Tolerance	
ccm/10s + :	41.6
Check tolerance	
ccm/10s + :	41.6

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Overflow quantity  
ccm/10s : 62.5

Tolerance  
ccm/10s +- : 20.8

Check tolerance  
ccm/10s +- : 20.8

Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2250

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0

Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0

Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0

Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2700

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0

Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0

Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

Aneroid pressure  
hPa : 400

Del. quantity  
cm<sup>3</sup>/1000 strokes : 56.5

Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 57.5

Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.3

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.5

Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 62.0

Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.5

Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5

Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 61.5

Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.3

Shutoff solenoid  
Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

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#### IDLE DELIVERY

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

---

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.5  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,4  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,4  
Tolerance mm ± : ±0,2

---

#### POTENTIOMETER SET

1. measurement  
voltage Volt : 5,0  
1. measurement  
voltage Volt : ARF1=2,9 V  
2. measurement  
voltage Volt : ARF2=1,9 V

#### MICROSWITCH SET

: ARF 12,0

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 14.07.94  
Test oil : ISO 4113  
Part no. : 0 460 484 054  
Pump designation : VE4/8F2300R425-1

## Customer-spec. information

Customer : PSA  
Motor : XUD9AL Peug. D70

## TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm + : +0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm + : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 6.0  
Tolerance bar + : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm<sup>3</sup>/1000 strokes : 30.2  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid Volt : 12

### IDLE DELIVERY

Rated speed rpm : 375  
Del. quantity cm<sup>3</sup>/1000 strokes : 10.5  
Tolerance cm<sup>3</sup>/1000 str. + : 1.0  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HIGH IDLE SETTING



Rated speed rpm : 475  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 9.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 55.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 13.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -6.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -1.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1

Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 7.1  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 800  
 SV travel mm : 1.6  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
 Supply pump  
 pressure bar : 8.5  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Supply pump  
 pressure bar : 3.6  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2200  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s ± : 41.6  
 Check tolerance  
 ccm/10s ± : 55.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
ccm/10s + : 34.7  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 11.0  
Tolerance  
cm3/1000 str. + : 2.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2500  
Del. quantity  
cm3/1000 strokes : 22.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2900  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2200  
Del. quantity  
cm3/1000 strokes : 33.0  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 31.3  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

Del. quantity  
cm3/1000 strokes : 30.2  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -8.5  
Tolerance  
cm3/1000 str. + : 5.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -1.0  
Tolerance  
cm3/1000 str. + : 0.1  
Check tolerance  
cm3/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 5.0

Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.5  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm3/1000 strokes : 30.0  
Tolerance  
cm3/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm3/1000 strokes : 54.0  
Tolerance  
cm3/1000 str. +- : 17.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,4  
Tolerance mm +- : +-0,2

#### CONTROL LEVER POSITION SET

Control Lever  
position YA mm : 18,8..22,8

Control Lever  
position YB mm : 78,4..90,6

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 10.04.95  
Test oil : ISO 4113  
  
Part no. : 0 460 484 098  
Pump designation : VE4/8F2300R425-11

Customer-spec. information  
Customer : PSA  
Motor : XUD9 A/L  
Power KW : 51.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm +- : +-0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.7  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 6.0  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 30.2  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 5.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 13.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Spread  
cm3/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 13.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -6.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 7.1  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 1.6  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.6  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6  
Check tolerance  
ccm/10s ± : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2  
 Check tolerance  
 ccm/10s +- : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
 Del. quantity  
 cm3/1000 strokes : 11.0  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm3/1000 strokes : 22.5  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2900  
 Del. quantity  
 cm3/1000 strokes : 3.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2200  
 Del. quantity  
 cm3/1000 strokes : 33.0  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 31.3  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 3.0

Shutoff solenoid  
 Volt : 12  
 Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 30.2  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

---

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -8.5  
 Tolerance  
 cm3/1000 str. +- : 5.0  
 Check tolerance  
 cm3/1000S. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.5  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 17.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,4  
Tolerance mm +- : +-0,2

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 10.11.95

Test oil : ISO 4113

Part no. : 0 460 484 109

Pump designation : VE4/8F2300R425-13

## Customer-spec. information

Customer : PSA

Motor : XUD9 A L3

Power kW : 51.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return

temperature °C : 45

Tolerance °C ± : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar ± : 0.05

Test nozzle holde

assembly : 1 688 901 022

Opening pressure

bar : 130

Tolerance bar ± : 3

Test Lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3

Tolerance mm ± : ±0,02

Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.5

Tolerance mm ± : 0.2

Shutoff solenoid

Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Supply pump

pressure bar : 6.0

Tolerance bar ± : 0.3

Shutoff solenoid

Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250

Del. quantity

cm<sup>3</sup>/1000 strokes : 30.2

Tolerance

cm<sup>3</sup>/1000 str. ± : 0.5

Spread

cm<sup>3</sup>/1000 strokes : 2.0

Shutoff solenoid

Volt : 12

### HOUSING-FIXED IDLE SPRING

### RESIDUAL QUANTITY SETTING

Rated speed rpm : 500

Del. quantity

cm<sup>3</sup>/1000 strokes : 5.0

Tolerance

cm<sup>3</sup>/1000 str. ± : 0.5

Shutoff solenoid

Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400

Del. quantity

cm<sup>3</sup>/1000 strokes : 13.0

Tolerance

cm<sup>3</sup>/1000 str. ± : 1.0

Spread

cm<sup>3</sup>/1000 strokes : 2.0



Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 47.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -6.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 7.6  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 0.8  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6  
Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 22.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2900  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -7.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.5  
Check  
tolerance mm ± : 0.6  
Shutoff solenoid  
Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.4  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 350

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 17.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,4  
Tolerance mm ± : ±0,2

#### MICROSWITCH SET

mm : 0,8...3,0  
: ARF 12,0

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 29.02.96  
 Test oil : ISO 4113  
 Part no. : 0 460 484 110  
 Pump designation : VE4/8F2300R425-14

Customer-spec. information  
 Customer : PSA  
 Motor : XUD9AY-L3 cit.ZX  
 Power KW : 50.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return  
 temperature °C : 45  
 Tolerance °C +- : 1

Overflow  
 restriction mm : 0.55

Inlet press. bar : 0.35  
 Tolerance bar +- : 0.05

Test nozzle holde  
 assembly : 1 688 901 022

Opening pressure  
 bar : 130  
 Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
 x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
 Tolerance mm +- : +-0,2  
 Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
 Setting mm : 3.5  
 Tolerance mm +- : 0.2  
 Shutoff solenoid  
 Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
 Supply pump  
 pressure bar : 6.0  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 30.2  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Spread  
 cm3/1000 strokes : 2.0  
 Shutoff solenoid  
 Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Shutoff solenoid  
 Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 13.0  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Spread  
 cm3/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 47.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -6.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 7.6  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800

SV travel mm : 0.8  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2  
 Check tolerance  
 ccm/10s +- : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 22.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2900  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
 cm<sup>3</sup>/1000s. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -7.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

## DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

## PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.5  
Check  
tolerance mm ± : 0.6  
Shutoff solenoid  
Volt : 12

## EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 19.4  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 4.0  
Shutoff solenoid  
Volt : 12

## START TRANSITION

Rated speed rpm : 350

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 17.0  
Shutoff solenoid  
Volt : 12

## ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,4  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: ARF 12,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 27,8...31,8  
Control lever  
position YB mm : 74,0...85,0

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 24.01.95  
Test oil : ISO 4113  
  
Part no. : 0 460 484 057  
Pump designation : VE4/8F2300R425-3

## Customer-spec. information

Customer : PSA  
Motor : XUD9AL - BVA

## TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm + : +0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.3  
Tolerance mm + : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 5.1  
Tolerance bar + : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm<sup>3</sup>/1000 strokes : 30.2  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance cm<sup>3</sup>/1000 str. + : 1.0  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HIGH IDLE SETTING



Rated speed rpm : 475  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 9.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 55.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 13.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -7.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.1  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -1.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.1

Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000

SV travel mm : 7.1  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 800

SV travel mm : 0.7  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
 Supply pump  
 pressure bar : 7.6  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Supply pump  
 pressure bar : 3.0  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2200  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6  
 Check tolerance  
 ccm/10s + : 55.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 34.7  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 11.0  
Tolerance  
cm3/1000 str. + : 2.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2500  
Del. quantity  
cm3/1000 strokes : 22.5  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2900  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2200  
Del. quantity  
cm3/1000 strokes : 33.0  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 31.3  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

Del. quantity  
cm3/1000 strokes : 30.2  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -8.0  
Tolerance  
cm3/1000 str. + : 5.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -1.2

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.5  
Check  
tolerance mm ± : 0.6  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 17.0  
Shutoff solenoid  
Volt : 12

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#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,4  
Tolerance mm ± : ±0,2

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 33,8..37,8

Control lever  
position YB mm : 63,0..77,0

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 24.01.95  
Test oil : ISO 4113  
Part no. : 0 460 484 064  
Pump designation : VE4/8F2300R425-5

Customer-spec. information  
Customer : PSA  
Motor : XUD9 A-L

## TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar  $\pm$  : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar  $\pm$  : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm  $\pm$  :  $\pm 0,02$   
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.7  
Tolerance mm  $\pm$  : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 6.0  
Tolerance bar  $\pm$  : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm<sup>3</sup>/1000 strokes : 30.2  
Tolerance cm<sup>3</sup>/1000 str.  $\pm$  : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 4.5  
Tolerance cm<sup>3</sup>/1000 str.  $\pm$  : 0.5  
Shutoff solenoid Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance cm<sup>3</sup>/1000 str.  $\pm$  : 1.0  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HIGH IDLE SETTING

Rated speed rpm : 475  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 9.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 55.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 13.0  
 Shutoff solenoid  
 Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -6.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -0.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -1.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1

Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 7.1  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 800  
 SV travel mm : 1.6  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.7  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
 Supply pump  
 pressure bar : 8.5  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Supply pump  
 pressure bar : 3.6  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2200  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s ± : 41.6  
 Check tolerance  
 ccm/10s ± : 55.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
ccm/10s + : 34.7  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2900  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -8.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0

Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s.  $\pm$  : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar  $\pm$  : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm  $\pm$  : 0.5  
Check  
tolerance mm  $\pm$  : 0.6  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 17.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,4  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### CONTROL LEVER POSITION SET

Control Lever  
position YA mm : 28,8..32,8

Control Lever  
position YB mm : 74,0..85,0

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 10.11.95  
Test oil : ISO 4113  
Part no. : 0 460 484 070  
Pump designation : VE4/8F2300R425-6

## Customer-spec. information

Customer : PSA  
Motor : XUD9AY/L3 Cit.ZX

## TEST BENCH REQUIREMENTS

### Calibrating-oil return

temperature °C : 45  
Tolerance °C +- : 1

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm +- : +-0,2  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.5  
Tolerance mm +- : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 6.0  
Tolerance bar +- : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm3/1000 strokes : 30.2  
Tolerance cm3/1000 str. +- : 0.5  
Spread cm3/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity cm3/1000 strokes : 5.0  
Tolerance cm3/1000 str. +- : 0.5  
Shutoff solenoid Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity cm3/1000 strokes : 13.0  
Tolerance cm3/1000 str. +- : 1.0  
Spread cm3/1000 strokes : 2.0  
Shutoff solenoid Volt : 12



# HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm3/1000 strokes : 9.5  
Tolerance  
cm3/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

# FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 11.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

# SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm3/1000 strokes : 47.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

# LOAD-DEPENDENT START OF DELIVERY SETTING

## DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -6.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

## PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -0.2  
Tolerance  
cm3/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

H07

Del. quantity  
cm3/1000 strokes : -1.0  
Tolerance  
cm3/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 7.6  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800

SV travel mm : 0.8  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6  
Check tolerance  
ccm/10s +- : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2  
 Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
 Del. quantity  
 cm3/1000 strokes : 11.0  
 Tolerance  
 cm3/1000 str. + : 2.0  
 Check tolerance  
 cm3/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm3/1000 strokes : 22.5  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000S. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2900  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2200  
 Del. quantity  
 cm3/1000 strokes : 33.0  
 Tolerance  
 cm3/1000 str. + : 1.0  
 Check tolerance  
 cm3/1000S. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 31.3  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 3.0

Shutoff solenoid  
 Volt : 12  
 Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 30.2  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -7.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.5  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.4  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0

Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 17.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,4  
Tolerance mm +- : +-0,2

#### MICROSWITCH SET

mm : 0,8..3,0  
: ARF 12,0

#### CONTROL LEVER POSITION SET

Control Lever  
position YA mm : 27,8..31,8

Control Lever  
position YB mm : 74,0..85,0

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.11.95  
Test oil : ISO 4113  
  
Part no. : 0 460 484 092  
Pump designation : VE4/8F2300R425-8

Customer-spec. information  
Customer : PSA  
Motor : XUD9A-L BVA  
Power KW : 51.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1  
  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test Lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

H10

Plunger stroke mm : 0,3  
Tolerance mm +- : +-0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 3.3  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.1  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 30.2  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 5.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 13.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Spread  
cm3/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 13.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -7.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 7.1  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 0.7  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 7.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2  
 Check tolerance  
 ccm/10s +- : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
 Del. quantity  
 cm3/1000 strokes : 11.0  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000s. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm3/1000 strokes : 22.5  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000s. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2900  
 Del. quantity  
 cm3/1000 strokes : 3.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000s. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2200  
 Del. quantity  
 cm3/1000 strokes : 33.0  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000s. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm3/1000 strokes : 31.3  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000s. +- : 3.0

Shutoff solenoid  
 Volt : 12  
 Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 30.2  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000s. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000s. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000s. +- : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000s. +- : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : -8.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.5  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Del. quantity  
cm<sup>3</sup>/1000 strokes : 10.7

#### START TRANSITION

Rated speed rpm : 350

H13

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 17.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,4  
Tolerance mm +- : +-0,2

#### MICROSWITCH SET

mm : 0,8...3,0  
: 10,7

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 33,8...37,8  
Control lever  
position YB mm : 63,0...77,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 10.11.95  
Test oil : ISC 4113

Part no. : 0 460 484 093  
Pump designation : VE4/8F2300R425-9

## Customer-spec. information

Customer : PSA  
Motor : XUD9AY-L3 Cit.ZX  
Power KW : 51.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm ± : ±0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.5  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 6.0  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0



Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 47.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -6.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 7.6  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
SV travel mm : 0.8  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 11.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 22.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2900  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 33.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 31.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -7.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 0.1  
Shutoff solenoid  
Volt : 12

## DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

## PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.5  
Check  
tolerance mm +- : 0.6  
Shutoff solenoid  
Volt : 12

## EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.4  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

## START TRANSITION

Rated speed rpm : 350

Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 17.0  
Shutoff solenoid  
Volt : 12

## ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,4  
Tolerance mm +- : +-0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: ARF 12,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 27,8..31,8  
Control lever  
position YB mm : 74,0..85,0

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 15.10.93  
Test oil : ISO 4113

Part no. : 0 460 494 279  
Pump designation : VE4/9F2300R426

## Customer-spec. information

Customer : PSA  
Motor : XUD 9/Y-N2 (1.9L)

## TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar  $\pm$  : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar  $\pm$  : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm  $\pm$  :  $\pm$ 0,02  
Outlet : B

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 4.2  
Tolerance mm  $\pm$  : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump pressure bar : 5.2  
Tolerance bar  $\pm$  : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity cm<sup>3</sup>/1000 strokes : 28.5  
Tolerance cm<sup>3</sup>/1000 str.  $\pm$  : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance cm<sup>3</sup>/1000 str.  $\pm$  : 0.5  
Shutoff solenoid Volt : 12

### IDLE DELIVERY

Rated speed rpm : 375  
Del. quantity cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance cm<sup>3</sup>/1000 str.  $\pm$  : 1.0  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid Volt : 12

### HIGH IDLE SETTING

Rated speed rpm : 470  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 59.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -5.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1

Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 8.0  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800

SV travel mm : 1.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2250  
Supply pump  
pressure bar : 7.9  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Supply pump  
pressure bar : 3.1  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 55.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s + : 20.8

Check tolerance  
ccm/10s + : 34.7  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2440  
Del. quantity  
cm3/1000 strokes : 23.0  
Tolerance  
cm3/1000 str. + : 2.0  
Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2540  
Del. quantity  
cm3/1000 strokes : 13.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 31.0  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 30.0  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 28.5

Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 375  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. + : 1.5  
Check tolerance  
cm3/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -8.0  
Tolerance  
cm3/1000 str. + : 2.0  
Check tolerance  
cm3/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : -0.8  
Tolerance  
cm3/1000 str. + : 0.1  
Check tolerance  
cm3/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 5.0  
Tolerance  
cm3/1000 str. + : 3.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -0.8  
Tolerance bar + : 0.2  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm + : 0.2  
Check  
tolerance mm + : 0.6  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1125  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 18.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Del. quantity  
cm<sup>3</sup>/1000 strokes : 10.8

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 225  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 63.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 17.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,8  
Tolerance mm + : +0,2  
Dimension MS mm : 1,4  
Tolerance mm + : +0,2

#### MICROSWITCH SET

mm : 1=ARF 8,0  
: 2=ARF 10,8

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 18,8..22,8

Control lever  
position YB mm : 82,0..96,0

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 04.01.94  
Test oil : ISO 4113  
Part no. : 0 460 494 342  
Pump designation : VE4/9F2250R445-2

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TE-L, TF-L

## TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm + : +0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Setting mm : 3.6  
Tolerance mm + : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Supply pump pressure bar : 5.6  
Tolerance bar + : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Del. quantity cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Check tolerance cm<sup>3</sup>/1000s. : 3.0  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid Volt : 12  
Check tolerance cm<sup>3</sup>/1000s. : 3.0

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490



Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000

SV travel mm : 1.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7

Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s + : 20.8

Check tolerance  
ccm/10s + : 20.8  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 14.0  
Tolerance  
cm3/1000 str. + : 2.0

Check tolerance  
cm3/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2375  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 39.0  
Tolerance  
cm3/1000 str. + : 5.0  
Check tolerance  
cm3/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. + : 3.0  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 350  
Del. quantity  
cm3/1000 strokes : 46.0  
Tolerance  
cm3/1000 str. + : 0.5  
Check tolerance  
cm3/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 50.1  
Tolerance  
cm3/1000 str. + : 1.0  
Check tolerance  
cm3/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 52.0  
Tolerance  
cm3/1000 str. + : 1.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

---

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -13.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.1  
Tolerance bar + : 0.2  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm + : 0.2  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 6,0  
Tolerance mm + : +0,2  
Dimension MS mm : 1,3  
Tolerance mm + : +0,2

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.94  
Test oil : ISO 4113  
Part no. : 0 460 494 370  
Pump designation : VE4/9F2250R445-3

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TE-L;P.306

## TEST BENCH REQUIREMENTS

Overflow restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar + : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar + : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

### Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm + : +0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Aneroid pressure hPa : 1000  
Setting mm : 4.1  
Tolerance mm + : 0.2  
Shutoff solenoid Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure hPa : 1000  
Supply pump pressure bar : 5.7  
Tolerance bar + : 0.3  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Del. quantity cm<sup>3</sup>/1000 strokes : 54.5  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Spread cm<sup>3</sup>/1000 strokes : 2.0  
Check tolerance cm<sup>3</sup>/1000S. : 3.0  
Shutoff solenoid Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid Volt : 12  
Check tolerance cm<sup>3</sup>/1000S. : 3.0

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490

Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 12

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.2  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.2  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s + : 20.8

Check tolerance  
ccm/10s + : 20.8  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2375  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 39.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

Aneroid pressure  
hPa : 350

LDA/  
HBA stroke mm : 5,9  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.1  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2

Shutoff solenoid  
Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 28,8..32,8

Control lever  
position YB mm : 68,0..82,0

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End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 28.09.95  
Test oil : ISO 4113

Part no. : 0 460 494 388  
Pump designation : VE4/9F2250R445-4

Customer-spec. information  
Customer : PSA  
Motor : XUD 9 TE-L;P.306

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

J03

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000

Setting mm : 4.1  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12

# IDLE DELIVERY

Rated speed rpm : 440  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 16.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Spread  
 cm<sup>3</sup>/1000 strokes : 2.0  
 Shutoff solenoid  
 Volt : 12

# HIGH IDLE SETTING

Rated speed rpm : 490  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 16.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

# FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
 Pressure hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 14.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

# STARTING FUEL DELIVERY

Rated speed rpm : 150  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

# SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 53.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Shutoff solenoid  
 Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

# TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 6.5  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 1.2  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

# SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 6.8  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.2  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

# OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6  
 Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s + : 20.8  
  
Check tolerance  
ccm/10s + : 20.8  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2375  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 39.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0

Shutoff solenoid  
Volt : 12  
  
Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 51.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
cm3/1000 str.  $\pm$  : 1.5  
Check tolerance  
cm3/1000S.  $\pm$  : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str.  $\pm$  : 1.5  
Check tolerance  
cm3/1000S.  $\pm$  : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str.  $\pm$  : 1.5  
Check tolerance  
cm3/1000S.  $\pm$  : 1.5

START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm3/1000 strokes : 35.0  
Tolerance  
cm3/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,3  
Tolerance mm  $\pm$  :  $\pm 0,2$

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 28,8..32,8

Control lever  
position YB mm : 68,0..82,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113

Part no. : 0 460 494 409  
Pump designation : VE4/9F2250R445-5

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF-L  
Power KW : 67.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Setting mm : 4.1  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. ± : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.2  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6  
Check tolerance  
ccm/10s ± : 41.6

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000

Overflow quantity  
 ccm/10s : 62.5  
 Tolerance  
 ccm/10s +- : 20.8

Check tolerance  
 ccm/10s +- : 20.8  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 14.0  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 39.0  
 Tolerance  
 cm3/1000 str. +- : 5.0  
 Check tolerance  
 cm3/1000S. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 3.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5.9

Del. quantity  
 cm3/1000 strokes : 46.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 50.1  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 52.0  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 48.3  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 54.5  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5.9  
Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0

Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 25,8..29,8

Control lever  
position YB mm : 68,0..82,0

---

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113

Part no. : 0 460 494 410  
Pump designation : VE4/9F225DR445-6

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF/L  
Power KW : 67.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00  
x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Setting mm : 4.1  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000s. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000s. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. +- : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000

Overflow quantity  
ccm/10s : 62.5

Tolerance  
ccm/10s + : 20.8

Check tolerance  
ccm/10s + : 20.8

Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2375

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 39.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

Aneroid pressure  
hPa : 350

Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.1

Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0

Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3

Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.5

Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2

Shutoff solenoid  
Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000

Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 25,8..29,8

Control lever  
position YB mm : 68,082,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 22.06.95  
Test oil : ISO 4113

Part no. : 0 460 494 411  
Pump designation : VE4/9F2250R445-7

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF/L  
Power KW : 67.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Setting mm : 4.1  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. ± : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.2  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6  
Check tolerance  
ccm/10s ± : 41.6

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 62.5  
 Tolerance  
 ccm/10s + : 20.8

Check tolerance  
 ccm/10s + : 20.8  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 14.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 39.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 3.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5,9

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 46.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 50.1  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 48.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 54.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0

Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 25,8..29,8

Control lever  
position YB mm : 73,0..87,0

---

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 25.04.95  
Test oil : ISO 4113

Part no. : 0 460 494 412  
Pump designation : VE4/9F2250R445-8

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF/L  
Power KW : 67.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Setting mm : 4.1  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.7  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. +- : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 900  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.2  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s + : 20.8

Check tolerance  
ccm/10s + : 20.8  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2375  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 39.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 350

LDA/  
HBA stroke mm : 5,9

Del. quantity  
cm<sup>3</sup>/1000 strokes : 46.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.1  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000s. + : 2.2  
Shutoff solenoid  
Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0

Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 25,8..29,8

Control lever  
position YB mm : 68,0..82,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 23.10.95

Test oil : ISO 4113

Part no. : 0 460 494 428

Pump designation : VE4/9F2250R445-9

## Customer-spec. information

Customer : PSA

Motor : XUD 9 TE-L;

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return

temperature °C : 45

Tolerance °C ± : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar ± : 0.05

Test nozzle holde

assembly : 1 688 901 022

Opening pressure

bar : 130

Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1500

Aneroid pressure  
hPa : 1000

Setting mm : 4.1

Tolerance mm ± : 0.2

Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1500

Aneroid pressure  
hPa : 1000

Supply pump  
pressure bar : 5.7

Tolerance bar ± : 0.3

Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.5

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5

Spread  
cm<sup>3</sup>/1000 strokes : 2.0

Check tolerance  
cm<sup>3</sup>/1000s. : 3.0

Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500

Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5

Shutoff solenoid  
Volt : 12

Check tolerance  
cm<sup>3</sup>/1000s. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490

Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5

Shutoff solenoid  
Volt : 12

# IDLE DELIVERY

Rated speed rpm : 440  
 Del. quantity  
 cm3/1000 strokes : 16.0  
 Tolerance  
 cm3/1000 str. + : 1.0  
 Spread  
 cm3/1000 strokes : 2.0  
 Shutoff solenoid  
 Volt : 12

# HIGH IDLE SETTING

Rated speed rpm : 490  
 Del. quantity  
 cm3/1000 strokes : 16.0  
 Tolerance  
 cm3/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

# FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
 Pressure hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 14.0  
 Tolerance  
 cm3/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

# STARTING FUEL DELIVERY

Rated speed rpm : 150  
 Del. quantity  
 cm3/1000 strokes : 52.0  
 Tolerance  
 cm3/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

# SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
 Del. quantity  
 cm3/1000 strokes : 53.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Shutoff solenoid  
 Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

# TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 6.5  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : 1000  
 SV travel mm : 1.2  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

# SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 6.8  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.2  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

# OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6  
 Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s +- : 20.8

Check tolerance  
ccm/10s +- : 20.8  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 14.0  
Tolerance  
cm3/1000 str. +- : 2.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2375  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 39.0  
Tolerance  
cm3/1000 str. +- : 5.0  
Check tolerance  
cm3/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2750  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 350

LDA/  
HBA stroke mm : 5,9  
Del. quantity  
cm3/1000 strokes : 46.0  
Tolerance  
cm3/1000 str. +- : 0.5

Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2150  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 51.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 52.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 48.3  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.2  
Shutoff solenoid  
Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 1.5

START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 28,8..32,8

Control lever  
position YB mm : 68,0..82,0

---

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 10.09.92  
Test oil : ISO 4113

Part no. : 0 460 494 310  
Pump designation : VE4/9F2150R474

## Customer-spec. information

Customer : PSA  
Motor : XUD11ATE-L BVM

## TEST BENCH REQUIREMENTS

Inlet press. bar : 0.35  
Tolerance bar  $\pm$  : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar  $\pm$  : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm  $\pm$  :  $\pm 0,02$   
Outlet : A

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 2.5  
Tolerance mm  $\pm$  : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.3  
Tolerance bar  $\pm$  : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 61.5  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2250  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 77.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 5.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.4  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 62.5  
 Tolerance  
 ccm/10s +- : 20.8  
 Check tolerance  
 ccm/10s +- : 20.8  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 52.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 37.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2700  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 8.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 400  
 Del. quantity  
 cm3/1000 strokes : 56.5  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 56.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 62.0  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 61.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 61.5  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 2.3  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

---

IDLE DELIVERY

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

---

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 325

K02

Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.5  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,4  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,1  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: ARF 12,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 10.09.92  
Test oil : ISO 4113

Part no. : 0 460 494 313  
Pump designation : VE4/9F2150R474-1

Customer-spec. information  
Customer : PSA  
Motor : XUD11ATE-L/BVA

## TEST BENCH REQUIREMENTS

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holder assembly : 1 688 901 022

Opening pressure bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,3  
Tolerance mm +- : +-0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

K03

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Setting mm : 2.5  
Tolerance mm +- : 0.2  
Shutoff solenoid Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Supply pump pressure bar : 5.3  
Tolerance bar +- : 0.3  
Shutoff solenoid Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure hPa : 1000  
Del. quantity cm3/1000 strokes : 61.5  
Tolerance cm3/1000 str. +- : 0.5  
Spread cm3/1000 strokes : 2.5  
Check tolerance cm3/1000s. : 2.5  
Shutoff solenoid Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity cm3/1000 strokes : 43.0  
Tolerance cm3/1000 str. +- : 0.5  
Spread cm3/1000 strokes : 2.5  
Shutoff solenoid Volt : 12  
Check tolerance cm3/1000s. : 2.5  
Check tolerance cm3/1000s. : 2.5

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity cm3/1000 strokes : 3.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2250  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 77.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 5.9  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.4  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6  
Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 62.5  
 Tolerance  
 ccm/10s + : 20.8

Check tolerance  
 ccm/10s + : 20.8  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2700  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 8.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 400  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 56.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 56.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 62.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 61.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 61.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.3  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5

Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

---

IDLE DELIVERY

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

---

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 325

K06

Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.5  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,4  
Tolerance mm + : +0,2  
Dimension MS mm : 1,1  
Tolerance mm + : +0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: ARF,12,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 34,3..38,3  
Control lever  
position YB mm : 73,7..88,3

---

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 14.02.95  
Test oil : ISO 4113

Part no. : 0 460 494 386  
Pump designation : VE4/9F2150R474-2

## Customer-spec. information

Customer : PSA  
Motor : XUD11ATE-L/BVA  
Power KW : 78.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test Lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 2.5  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.3  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 61.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 43.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 2.5

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550

Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 13.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2250  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 5.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 77.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

K08

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 5.9  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.3  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.4  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6  
Check tolerance  
ccm/10s +- : 41.6

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Overflow quantity  
 ccm/10s : 62.5

Tolerance  
 ccm/10s +- : 20.8

Check tolerance  
 ccm/10s +- : 20.8

Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2250

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.0

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 4.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 37.0

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 4.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2700

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 8.0

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 4.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750

Aneroid pressure  
 hPa : 400

LDA/  
 HBA stroke mm : 7,1

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 56.5

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 3.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 56.5

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 62.0

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 61.5

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 61.5

Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.3

Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000

Aneroid pressure  
 hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

---

IDLE DELIVERY

Rated speed rpm : 375  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0

Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.5  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7,1  
Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,1  
Tolerance mm +- : +-0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: ARF 12,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 21.06.96  
Test oil : ISO 4113

Part no. : 0 460 414 159  
Pump designation : VE4/11F2000R509-4

Customer-spec. information  
Customer : ROVER  
Motor : GEMINI 3  
Power KW : 83.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 55

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 116

Opening pressure  
bar : 207  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 1,45  
Outlet : C

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1600  
Aneroid pressure  
hPa : 1000  
Setting mm : 3.6  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 24

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1600  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 66.2  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 3.0  
Check tolerance  
cm3/1000S. : 4.0  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.8  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 24  
Check tolerance  
cm3/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 350

Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 24  
Spread  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 4.5

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 98.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 24

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 2000  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 24

#### SETTING GRAD. STARTING FUEL DELIVERY FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 45.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 24

#### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000

SV travel mm : 6.4  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.9  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1000

SV travel mm : 2.1  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.9  
Shutoff solenoid  
Volt : 24

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 8.0  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1400  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.1  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1000

#### OVERFLOW QUANTITY

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 77.7  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 125.0  
 Tolerance  
 ccm/10s + : 41.6  
 Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 24

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.5  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 2400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 16.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 6.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 2600  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 800  
 Aneroid pressure  
 hPa : 300

LDA/  
 HBA stroke mm : 6.4  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 48.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.2  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 65.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 900  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 63.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 1400  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 66.2  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.5  
 Shutoff solenoid  
 Volt : 24

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350

Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 24

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 39.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 24

#### START TRANSITION

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 20.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 115.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 25.0  
Shutoff solenoid  
Volt : 24

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 6.4  
Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 8,4  
Tolerance mm + : +0,2  
MS1 dimension mm : 1,45  
Tolerance mm + : +0,15/-0,1

#### POTENTIOMETER SET

1. measurement  
voltage Volt : 5,0  
1. measurement  
voltage Volt : 3,1

#### MICROSWITCH SET

: ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 42,3..46,3

Control lever  
position YB mm : 50,0..61,0

End of test-specification sheet



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.09.95  
Test oil : ISO 4113  
Part no. : 0 460 494 341  
Pump designation : VE4/9F2250P513

Customer-spec. information  
Customer : PSA  
Motor : XUD 9 TF-Y  
Power KW : 67.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1  
Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

K15

Plunger stroke mm : 0,3  
Tolerance mm +- : +-0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 3.6  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000s. : 3.0  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000s. : 3.0

HOUSING-FIXED IDLE SPRING  
RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Shutoff solenoid  
Volt : 12

IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

SET GRADUATED STARTING DELIVERY  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 200

Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

LOAD-DEPENDENT START OF DELIVERY  
SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12  
Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000

SV travel mm : 1.5  
 Tolerance mm +- : 0.4  
 Check  
 tolerance mm +- : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s +- : 41.6

Check tolerance  
 ccm/10s +- : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2

Check tolerance  
 ccm/10s +- : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 14.0  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000s. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 39.0  
 Tolerance  
 cm3/1000 str. +- : 5.0  
 Check tolerance  
 cm3/1000s. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 3.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000s. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350  
 Del. quantity  
 cm3/1000 strokes : 46.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000s. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 50.1  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000s. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

---

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -13.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250

Supply pump  
pressure bar : -1.1  
Tolerance bar  $\pm$  : 0.2  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm  $\pm$  : 0.2  
Check  
tolerance mm  $\pm$  : 0.7  
Shutoff solenoid  
Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.8  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S.  $\pm$  : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,2  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### MICROSWITCH SET

mm : 0,8...3,0  
: ARF 12,0

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.09.95  
Test oil : ISO 4113  
Part no. : 0 460 494 371  
Pump designation : VE4/9F2250R513-1

Customer-spec. information  
Customer : PSA  
Motor : XUD 9 TF/Y  
Power KW : 66.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

K20

Plunger stroke mm : 0,3  
Tolerance mm +- : +-0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000

Setting mm : 3.6  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

HOUSING-FIXED IDLE SPRING  
RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

SET GRADUATED STARTING DELIVERY  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 200

Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

LOAD-DEPENDENT START OF DELIVERY  
SETTING

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

---

INJECTION-PUMP TEST SPECIFICATIONS

TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000

SV travel mm : 1.5  
 Tolerance mm +- : 0.4  
 Check  
 tolerance mm +- : 0.7  
 Shutoff solenoid  
 Volt : 12

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar +- : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s +- : 41.6

Check tolerance  
 ccm/10s +- : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s +- : 22.2

Check tolerance  
 ccm/10s +- : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575

Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 14.0  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 39.0  
 Tolerance  
 cm3/1000 str. +- : 5.0  
 Check tolerance  
 cm3/1000S. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 3.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5,9  
 Del. quantity  
 cm3/1000 strokes : 46.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 50.1  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 2.2



Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0

Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.2

Shutoff solenoid  
Volt : 12

Rated speed rpm : 500

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.3

Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.2

Shutoff solenoid  
Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000

Aneroid pressure  
hPa : 1000

Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 440

Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 440

Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5

Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : -13.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0

Check tolerance  
cm<sup>3</sup>/1000S. ± : 5.0

Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1

Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1

Shutoff solenoid  
Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0

Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0

Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Supply pump  
pressure bar : -1.1  
Tolerance bar  $\pm$  : 0.2  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm  $\pm$  : 0.2  
Check  
tolerance mm  $\pm$  : 0.7  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 23.8  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 1.0  
Check tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,3  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### MICROSWITCH SET

mm : 0,8...3,0  
: ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 28,8..32,8

Control lever  
position YB mm : 69,2..80,8

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.09.95  
Test oil : ISO 4113

Part no. : 0 460 494 383  
Pump designation : VE4/9F2250R513-2

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF-Y  
Power kW : 66.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 3.6  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.6  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000

SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s ± : 41.6

Check tolerance  
 ccm/10s ± : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
 ccm/10s ± : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 14.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 39.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 3.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5,9  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 46.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 50.1  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 2.2

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 48.3  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 54.0  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 440  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 440  
 Del. quantity  
 cm3/1000 strokes : 1.5

Tolerance  
 cm3/1000 str. + : 1.5  
 Check tolerance  
 cm3/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -13.0  
 Tolerance  
 cm3/1000 str. + : 2.0  
 Check tolerance  
 cm3/1000S. + : 5.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -1.0  
 Tolerance  
 cm3/1000 str. + : 0.1  
 Check tolerance  
 cm3/1000S. + : 0.1  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Supply pump  
 pressure bar : -1.1  
 Tolerance bar + : 0.2  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm  $\pm$  : 0.2  
Check  
tolerance mm  $\pm$  : 0.7  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.8  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 1.0  
Check tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,3  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### MICROSWITCH SET

mm : 0,8...3,0  
: ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 28,8..32,8

Control lever  
position YB mm : 69,2..80,8

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 27.09.95  
Test oil : ISO 4113

Part no. : 0 460 494 384  
Pump designation : VE4/9F2250R513-3

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF/Y  
Power KW : 66.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 3.6  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.6  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 54.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 8.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5



Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

L03

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000

SV travel mm : 1.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 14.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 39.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 3.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5,9  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 46.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 50.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 51.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 2.2

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 48.3  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 54.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 440  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 440  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5

Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -13.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 5.0  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -1.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 0.1  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 0.1  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 3.0  
 Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Supply pump  
 pressure bar : -1.1  
 Tolerance bar ± : 0.2  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm  $\pm$  : 0.2  
Check  
tolerance mm  $\pm$  : 0.7  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.8  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S.  $\pm$  : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,3  
Tolerance mm  $\pm$  :  $\pm 0,2$

#### MICROSWITCH SET

mm : 0,8...3,0  
: ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 25,8...29,8

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 18.10.95  
Test oil : ISO 4113

Part no. : 0 460 494 423  
Pump designation : VE4/9F2250R513-4

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF/L EGR  
Power KW : 66.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 3.6  
Tolerance mm +- : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. +- : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000

SV travel mm : 6.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000

SV travel mm : 1.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250

# SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 14.0  
 Tolerance  
 cm3/1000 str. + : 2.0  
 Check tolerance  
 cm3/1000S. + : 4.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 39.0  
 Tolerance  
 cm3/1000 str. + : 5.0  
 Check tolerance  
 cm3/1000S. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 3.0  
 Tolerance  
 cm3/1000 str. + : 3.0  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5,9  
 Del. quantity  
 cm3/1000 strokes : 46.0  
 Tolerance  
 cm3/1000 str. + : 0.5  
 Check tolerance  
 cm3/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 50.5  
 Tolerance  
 cm3/1000 str. + : 1.0  
 Check tolerance  
 cm3/1000S. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 51.5

Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 48.3  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 54.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 440  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 440  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -13.0  
 Tolerance  
 cm3/1000 str. +- : 2.0  
 Check tolerance  
 cm3/1000S. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : -1.0  
 Tolerance  
 cm3/1000 str. +- : 0.1  
 Check tolerance  
 cm3/1000S. +- : 0.1  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 5.0  
 Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
 Supply pump  
 pressure bar : -1.1  
 Tolerance bar +- : 0.2  
 Shutoff solenoid  
 Volt : 12



#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.2  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.8  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

#### MICROSWITCH

SET

: ARF 12,0

#### CONTROL LEVER POSITION

SET

Control lever  
position YA mm : 25,8..29,8

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 23.10.95  
Test oil : ISO 4113

Part no. : 0 460 494 430  
Pump designation : VE4/9F2250R513-5

## Customer-spec. information

Customer : PSA  
Motor : XUD 9 TF/X3  
Power KW : 66.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Setting mm : 3.6  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.6  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 54.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Check tolerance  
cm3/1000S. : 3.0  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 3.0

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 490  
Del. quantity  
cm3/1000 strokes : 8.5  
Tolerance  
cm3/1000 str. ± : 0.5

Shutoff solenoid  
Volt : 12

#### IDLE DELIVERY

Rated speed rpm : 440  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 490  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 16.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2575  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 150  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 53.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

#### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -10.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 6.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2575  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 14.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2375  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 39.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 3.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Aneroid pressure  
 hPa : 350

LDA/  
 HBA stroke mm : 5,9  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 46.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 50.1  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 52.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 2.2

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 48.3

Tolerance  
 cm3/1000 str. + : 1.5

Check tolerance  
 cm3/1000S. + : 3.0

Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1250

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 54.0

Tolerance  
 cm3/1000 str. + : 0.5

Check tolerance  
 cm3/1000S. + : 2.2

Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2000

Aneroid pressure  
 hPa : 1000

Del. quantity  
 cm3/1000 strokes : 1.5

Tolerance  
 cm3/1000 str. + : 1.5

Check tolerance  
 cm3/1000S. + : 1.5

Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 440

Del. quantity  
 cm3/1000 strokes : 1.5

Tolerance  
 cm3/1000 str. + : 1.5

Check tolerance  
 cm3/1000S. + : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 440

Del. quantity  
 cm3/1000 strokes : 1.5

Tolerance  
 cm3/1000 str. + : 1.5

Check tolerance  
 cm3/1000S. + : 1.5

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
 cm3/1000 strokes : -13.0

Tolerance  
 cm3/1000 str. + : 2.0

Check tolerance  
 cm3/1000S. + : 5.0

Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
 cm3/1000 strokes : -1.0

Tolerance  
 cm3/1000 str. + : 0.1

Check tolerance  
 cm3/1000S. + : 0.1

Shutoff solenoid  
 Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250

Del. quantity  
 cm3/1000 strokes : 5.0

Tolerance  
 cm3/1000 str. + : 3.0

Check tolerance  
 cm3/1000S. + : 3.0

Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250

Supply pump  
 pressure bar : -1.1

Tolerance bar + : 0.2

Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm +- : 0.2  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Control lever  
position Y3 mm : 59,2..80,8

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm3/1000 strokes : 17.8  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 380  
Del. quantity  
cm3/1000 strokes : 35.0  
Tolerance  
cm3/1000 str. +- : 10.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 5,9  
Dimension K mm : 3,3  
Tolerance mm +- : +-0,1  
Dimension KF mm : 6,0  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +-0,2

#### MICROSWITCH SET

: ARF 12,0

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 28,8..32,8

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 24.06.96  
Test oil : ISO 4113  
Part no. : 0 460 416 056  
Pump designation : VE6/11F1500R55-9

Customer-spec. information  
Customer : MAN  
Motor : D 0226 MF  
Power KW : 100.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 000

Opening pressure  
bar : 147  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Prestroke

L17

(as of UT) mm : 0,6  
Tolerance mm ± : ±0,02  
Check  
tolerance mm ± : ±0,04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1000  
Setting mm : 6.2  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 24

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1000  
Supply pump  
pressure bar : 6.0  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 64.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 3.5  
Shutoff solenoid  
Volt : 24

### IDLE SETTING

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 24  
Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 3.5

### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1550

Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 65.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 20.0  
Shutoff solenoid  
Volt : 24

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1400  
SV travel mm : 9.0  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 600  
SV travel mm : 3.7  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 24

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1400  
Supply pump  
pressure bar : 7.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 600  
Supply pump  
pressure bar : 4.5  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 24

##### OVERFLOW QUANTITY

Rated speed rpm : 1500  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 62.5  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 24

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1630  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 7.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1580  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 15.0



Shutoff solenoid  
Volt : 24

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 72.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 47.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 64.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 24

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 24

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Shutoff solenoid  
Volt : 24

#### START TRANSITION

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 370  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 75.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 20.0  
Shutoff solenoid  
Volt : 24

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm : 5,8  
Tolerance mm +- : +0,2  
Dimension MS mm : 1,3  
Tolerance mm +- : +0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 37,4..40,4

Control lever  
position YB mm : 44,0..49,4

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 26.06.96  
Test oil : ISO 4113  
Part no. : 0 460 426 225  
Pump designation : VE6/12F1200R551

Customer-spec. information  
Customer : SNF  
Motor : WD 612.42  
Power KW : 105.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Prestroke

L21

(as of UT) mm : 0.2  
Tolerance mm ± : ±0.02  
Check  
tolerance mm ± : ±0.04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 850  
Setting mm : 2.2  
Tolerance mm ± : 0.2

### SUPPLY PUMP PRESSURE

Rated speed rpm : 350  
Supply pump  
pressure bar : 7.6  
Tolerance bar ± : 0.3

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 66.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 4.0

### IDLE SETTING

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 10.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 6.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 6.5

### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1290  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0

### STARTING FUEL DELIVERY

Rated speed rpm : 100

Del. quantity  
cm<sup>3</sup>/1000 strokes : 90.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 20.0

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 950

SV travel mm : 3.3  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7

Rated speed rpm : 750

SV travel mm : 1.0  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200  
Supply pump  
pressure bar : 9.3  
Tolerance bar +- : 0.3

Rated speed rpm : 600  
Supply pump  
pressure bar : 5.8  
Tolerance bar +- : 0.3

##### OVERFLOW QUANTITY

Rated speed rpm : 1200  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1290  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 50.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.5

Rated speed rpm : 1350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 7.5

Rated speed rpm : 1400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5

Rated speed rpm : 1300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 25.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 25.0

Rated speed rpm : 1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 66.3  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0

Rated speed rpm : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 68.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0

Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 65.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 6.0

Rated speed rpm : 800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 66.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5

Check tolerance  
cm<sup>3</sup>/1000S.    ± :    2.5

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#### MECHANICAL SHUTOFF

Rated speed rpm    :    1200  
Del. quantity  
cm<sup>3</sup>/1000 strokes    :    1.5  
Tolerance  
cm<sup>3</sup>/1000 str.    ± :    1.5  
Spread  
cm<sup>3</sup>/1000 strokes    :    5.0  
Check tolerance  
cm<sup>3</sup>/1000S.    ± :    1.5  
Spread  
cm<sup>3</sup>/1000 strokes    :    5.0

#### IDLE DELIVERY

Rated speed rpm    :    400  
Del. quantity  
cm<sup>3</sup>/1000 strokes    :    1.5  
Tolerance  
cm<sup>3</sup>/1000 str.    ± :    1.5  
Check tolerance  
cm<sup>3</sup>/1000S.    ± :    1.5

#### START TRANSITION

Rated speed rpm    :    430  
Del. quantity  
cm<sup>3</sup>/1000 strokes    :    65.0  
Tolerance  
cm<sup>3</sup>/1000 str.    ± :    15.0

Rated speed rpm    :    330  
Del. quantity  
cm<sup>3</sup>/1000 strokes    :    85.0  
Tolerance  
cm<sup>3</sup>/1000 str.    ± :    20.0

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension KF mm    : 6,0  
Tolerance mm    ± : ±0,2  
Dimension MS mm    : 1,1  
Tolerance mm    ± : ±0,2

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm    : 36,2..40,2

Control lever  
position YB mm    : 51,0..59,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 25.06.96  
Test oil : ISO 4113  
Part no. : 0 460 426 231  
Pump designation : VE6/12F1200R563

Customer-spec. information  
Customer : MAN  
Motor : D 0826 LOH 06  
Power KW : 140.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 110

Opening pressure  
bar : 250  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Prestroke

L24

(as of UT) mm : 0,2  
Tolerance mm ± : ±0,02  
Check  
tolerance mm ± : ±0,04

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1000

Setting mm : 2.2  
Tolerance mm ± : 0.2

### SUPPLY PUMP PRESSURE

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.5  
Tolerance bar ± : 0.3

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 94.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.5

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.5

### IDLE SETTING

Rated speed rpm : 250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.5  
Spread  
cm<sup>3</sup>/1000 strokes : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 6.5

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1350  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 65.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 90.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 30.0

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 950  
Aneroid pressure  
hPa : 1000  
SV travel mm : 3.3  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7

Rated speed rpm : 750  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.0  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 9.0  
Tolerance bar ± : 0.3

Rated speed rpm : 600

Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.3  
Tolerance bar ± : 0.3

##### OVERFLOW QUANTITY

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s ± : 22.2

Check tolerance  
ccm/10s ± : 22.2

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6

Check tolerance  
ccm/10s ± : 41.6

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1350  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 65.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 4.5

Rated speed rpm : 1510  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 7.5

Rated speed rpm : 1550  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5

Rated speed rpm : 1440

Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 20.0

Rated speed rpm : 600  
Aneroid pressure  
hPa : 400

LDA/  
HBA stroke mm : 6.2  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 80.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 89.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 91.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0

Rated speed rpm : 600  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 100.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 4.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 94.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5

#### MECHANICAL SHUTOFF

Rated speed rpm : 1200  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

#### START TRANSITION

Rated speed rpm : 480  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 20.0

Rated speed rpm : 380  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 100.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 20.0

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 6.2  
Dimension KF mm : 6,0  
Tolerance mm + : +0,2



Dimension MS mm : 1,1  
Tolerance mm  $\pm$  :  $\pm 0,2$

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 37,4..40,4

Control lever  
position YB mm : 41,9..48,1

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 16.05.95  
Test oil : ISO 4113

Part no. : C 460 414 108  
Pump designation : VE4/11F2000R567

Customer-spec. information  
Customer : FORD  
Motor : 2.5L DI  
Power KW : 56.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C +- : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar +- : 0.05

Test nozzle holde  
assembly : 1 688 901 114

Opening pressure  
bar : 207  
Tolerance bar +- : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,52  
Tolerance mm +- : +-0,05  
Outlet : B KDEP1151

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 2.7  
Tolerance mm +- : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 7.2  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1000  
Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 34.0  
Del. quantity  
cm3/1000 strokes : 25.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Tolerance  
cm3/1000 str. +- : 0.2  
Spread  
cm3/1000 strokes : 3.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 7.0  
Tolerance  
cm3/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 3.0  
Check tolerance  
cm3/1000S. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 45.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 20.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 5.3  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 SV travel mm : 1.7  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 SV travel mm : 2.9  
 Tolerance mm + : 0.1  
 Check  
 tolerance mm + : 0.6  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 8.9  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Supply pump  
 pressure bar : 5.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Supply pump  
 pressure bar : 6.7  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 119.4  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1950  
 Overflow quantity  
 ccm/10s : 150.0  
 Tolerance  
 ccm/10s + : 34.7

Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2140

Del. quantity  
cm<sup>3</sup>/1000 strokes : 29.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2330  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 4.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 4.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Aneroid pressure  
hPa :

LDA/  
HBA stroke mm : 7.7

Rated speed rpm : 1950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.2  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.2  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.2  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.3  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 480  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 6.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7.7  
Dimension K mm : 2,8  
Tolerance mm +- : +-0,1  
Dimension KF mm : 5,4  
Tolerance mm +- : +-0,2  
Dimension MS mm : 1,8  
Tolerance mm +- : +-0,2  
KSB travel mm : 10,0  
TLA travel mm : 2,5

MICROSWITCH  
SET

: ARF 20,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,8..45,8

Control lever  
position YB mm : 59,5..71,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 07.04.95  
Test oil : ISO 4113  
Part no. : 0 460 414 113  
Pump designation : VE4/11F2000R557-1

Customer-spec. information  
Customer : FORD  
Motor : 2.5L DI  
Power KW : 51.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 688 901 114

Opening pressure  
bar : 207  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

M04

Plunger stroke mm : 0,52  
Tolerance mm ± : ±0,05  
Outlet : B KDEP1151

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 2.5  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 7.4  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1150  
Rated speed rpm : 1950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 41.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.2  
Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 7.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 26.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 45.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 20.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 5.8  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 SV travel mm : 1.3  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 SV travel mm : 2.9  
 Tolerance mm ± : 0.1  
 Check  
 tolerance mm ± : 0.6  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 9.0  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Supply pump  
 pressure bar : 5.7  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1150  
 Supply pump  
 pressure bar : 7.2  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 1950  
 Overflow quantity  
 ccm/10s : 150.0  
 Tolerance  
 ccm/10s ± : 34.7

Check tolerance  
 ccm/10s ± : 34.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 119.4  
 Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
 ccm/10s ± : 22.2  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 26.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2300

Del. quantity  
cm3/1000 strokes : 12.0  
Check tolerance  
cm3/1000S. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2400  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Aneroid pressure  
hPa :

LDA/  
HBA stroke mm : 7.2

Rated speed rpm : 1700  
Del. quantity  
cm3/1000 strokes : 41.0  
Tolerance  
cm3/1000 str. +- : 1.2  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 28.5  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1950  
Del. quantity  
cm3/1000 strokes : 41.5  
Tolerance  
cm3/1000 str. +- : 0.2  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 425

Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 22.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 480  
Del. quantity  
cm3/1000 strokes : 26.0  
Tolerance  
cm3/1000 str. +- : 6.0



Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.0  
Tolerance  
cm<sup>3</sup>/1000 str.  $\pm$  : 15.0  
Shutoff solenoid  
Volt : 12

---

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7.2  
Dimension K mm : 2,8  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 5,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,8  
Tolerance mm  $\pm$  :  $\pm 0,2$   
KSB travel mm : 10,0  
TLA travel mm : 2,5

#### CONTROL LEVER POSITION SET

Control lever  
position YA mm : 41,0..44,0

Control lever  
position YB mm : 63,0..75,0

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.05.96  
Test oil : ISO 4113

Part no. : 0 460 484 078  
Pump designation : VE4/8F250GR611

Customer-spec. information  
Customer : PSA  
Motor : TUD 5-L  
Power KW : 42.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

M08

Plunger stroke mm : 0,8  
Tolerance mm ± : ±0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Setting mm : 5.0  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Supply pump  
pressure bar : 6.3  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1500  
Del. quantity  
cm3/1000 strokes : 24.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 2.0  
Tolerance  
cm3/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 350  
Del. quantity  
cm3/1000 strokes : 12.0  
Tolerance  
cm3/1000 str. ± : 1.0  
Spread  
cm3/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

---

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2200  
  
SV travel mm : 8.3  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
  
SV travel mm : 1.6  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.1  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Supply pump  
pressure bar : 4.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2450  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2580  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. + : 5.0

Shutoff solenoid  
Volt : 12

Rated speed rpm : 2800  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.2  
Shutoff solenoid  
Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Shutoff solenoid  
Volt : 12

ELECTR. SHUTOFF  
CONTROL LEVER, IDLE STOP

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### START TRANSITION

Rated speed rpm : 340  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 22.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 10.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 52.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 17.0  
Shutoff solenoid  
Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm ± : ±0,1  
Dimension KF mm : 6,0  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,0  
Tolerance mm ± : ±0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 32,0..36,0

Control lever  
position YB mm : 26,0..35,0

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 06.12.95  
Test oil : ISO 4113  
Part no. : 0 460 484 103  
Pump designation : VE4/8F2500R611-3

Customer-spec. information  
Customer : PSA  
Motor : TUD5-L4  
Power KW : 42.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,75  
Tolerance mm ± : ±0,02  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1500  
Setting mm : 5.0  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1500  
Supply pump  
pressure bar : 6.3  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 24.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 350  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0

Shutoff solenoid  
Volt : 12

#### HIGH IDLE SETTING

Rated speed rpm : 475  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### SET GRADUATED STARTING DELIVERY CONTROL LEVER, IDLE STOP

Rated speed rpm : 200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 40.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

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#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2200  
  
SV travel mm : 8.3  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
  
SV travel mm : 1.6  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2450

SV travel mm : 9.8  
Tolerance mm ± : 0.3

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2200  
Supply pump  
pressure bar : 8.1  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 800  
Supply pump  
pressure bar : 4.6  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 2450  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6

Check tolerance  
ccm/10s ± : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 600  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s ± : 22.2

Check tolerance  
ccm/10s ± : 22.2  
Shutoff solenoid  
Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 12.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2580  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0

Tolerance  
 cm3/1000 str. +- : 3.0  
 Check tolerance  
 cm3/1000S. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2800  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2450  
 Del. quantity  
 cm3/1000 strokes : 25.5  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 600  
 Del. quantity  
 cm3/1000 strokes : 25.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1500  
 Del. quantity  
 cm3/1000 strokes : 24.0  
 Tolerance  
 cm3/1000 str. +- : 0.5  
 Check tolerance  
 cm3/1000S. +- : 2.2  
 Shutoff solenoid  
 Volt : 12

#### MECHANICAL SHUTOFF

Rated speed rpm : 2450  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350  
 Del. quantity  
 cm3/1000 strokes : 1.5  
 Tolerance  
 cm3/1000 str. +- : 1.5  
 Check tolerance  
 cm3/1000S. +- : 1.5

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
 Del. quantity  
 cm3/1000 strokes : 15.0  
 Tolerance  
 cm3/1000 str. +- : 1.0  
 Check tolerance  
 cm3/1000S. +- : 4.0  
 Shutoff solenoid  
 Volt : 12

#### START TRANSITION

Rated speed rpm : 340  
 Del. quantity  
 cm3/1000 strokes : 22.5  
 Tolerance  
 cm3/1000 str. +- : 10.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 250  
 Del. quantity  
 cm3/1000 strokes : 52.0  
 Tolerance  
 cm3/1000 str. +- : 17.0  
 Shutoff solenoid  
 Volt : 12



---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 6,0  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,0  
Tolerance mm  $\pm$  :  $\pm 0,2$

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 30.11.95  
Test oil : ISO 4113  
  
Part no. : 0 460 414 119  
Pump designation : VE4/11F2000R624

Customer-spec. information  
Customer : FORD  
Motor : 2.5L DI  
Power KW : 56.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 114

Opening pressure  
bar : 207  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,52  
Tolerance mm ± : ±0,05  
Outlet : B KDEP1151

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 2.7  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 7.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1000  
Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 34.0  
Del. quantity  
cm3/1000 strokes : 25.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Tolerance  
cm3/1000 str. ± : 0.2  
Spread  
cm3/1000 strokes : 3.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 9.0  
Tolerance  
cm3/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 3.0  
Check tolerance  
cm3/1000S. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 45.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 20.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 5.5  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 SV travel mm : 1.7  
 Tolerance mm ± : 0.4  
 Check  
 tolerance mm ± : 0.9  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 8.9  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Supply pump  
 pressure bar : 5.5  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Supply pump  
 pressure bar : 6.7  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 119.4  
 Tolerance  
 ccm/10s ± : 22.2

Check tolerance  
 ccm/10s ± : 22.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1950  
 Overflow quantity  
 ccm/10s : 150.0  
 Tolerance  
 ccm/10s ± : 34.7

Check tolerance  
 ccm/10s ± : 34.7  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2140  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 29.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. ± : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400

Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Aneroid pressure  
hPa :

LDA/  
HBA stroke mm : 7.7

Rated speed rpm : 1950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.2  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 38.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.2  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.2  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.3  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 480  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0

Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7.7  
Dimension K mm : 2,8  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 5,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,8  
Tolerance mm  $\pm$  :  $\pm 0,2$

MICROSWITCH  
SET

: ARF 20

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,8..45,8

Control lever  
position YB mm : 59,5..71,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 30.11.95  
Test oil : ISO 4113  
  
Part no. : 0 460 414 138  
Pump designation : VE4/11F2000R624-2

Customer-spec. information  
Customer : FORD  
Motor : 2.5L DI  
Power KW : 56.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 114

Opening pressure  
bar : 207  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

M20

Plunger stroke mm : 0,52  
Tolerance mm ± : +0,05  
Outlet : B KDEP1151

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 2.7  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 7.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1000  
Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 34.0  
Del. quantity  
cm3/1000 strokes : 25.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Tolerance  
cm3/1000 str. ± : 0.2  
Spread  
cm3/1000 strokes : 3.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm3/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 9.0  
Tolerance  
cm3/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm3/1000 strokes : 3.0  
Check tolerance  
cm3/1000S. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 45.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 20.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 5.5  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 SV travel mm : 1.7  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.9  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 8.9  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Supply pump  
 pressure bar : 5.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Supply pump  
 pressure bar : 6.7  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 119.4  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1950  
 Overflow quantity  
 ccm/10s : 150.0  
 Tolerance  
 ccm/10s + : 34.7

Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2140  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 29.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400

Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Aneroid pressure  
hPa :

LDA/  
HBA stroke mm : 7.7

Rated speed rpm : 1950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.2  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1700  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 38.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.2  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.2  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 21.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 480  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 48.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0



Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7.7  
Dimension K mm : 2,8  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 8,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,8  
Tolerance mm  $\pm$  :  $\pm 0,2$

MICROSWITCH  
SET

: ARF 20,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,8..45,8

Control lever  
position YB mm : 59,5..71,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 09.05.96  
Test oil : ISO 4113  
  
Part no. : 0 460 414 150  
Pump designation : VE4/11F2000R624-4

Customer-spec. information  
Customer : FORD  
Motor : 2.5L DI  
Power KW : 56.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.75

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 688 901 114

Opening pressure  
bar : 207  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,52  
Tolerance mm ± : ±0,05  
Outlet : B KDEP1151

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
  
Setting mm : 2.7  
Tolerance mm ± : 0.1  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 7.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1000  
Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 34.0  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 25.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.2  
Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Shutoff solenoid  
Volt : 12  
Shutoff solenoid  
Volt : 12  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 425  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 45.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 20.0  
 Shutoff solenoid  
 Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 5.5  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.9  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 SV travel mm : 1.7  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.9  
 Shutoff solenoid  
 Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 8.9  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 500

Supply pump  
 pressure bar : 5.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Supply pump  
 pressure bar : 6.7  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 500  
 Overflow quantity  
 ccm/10s : 119.4  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1950  
 Overflow quantity  
 ccm/10s : 150.0  
 Tolerance  
 ccm/10s + : 34.7

Check tolerance  
 ccm/10s + : 34.7  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 23.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2140  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 29.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400

Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Aneroid pressure  
hPa :

LDA/  
HBA stroke mm : 7.7

Rated speed rpm : 1950  
Del. quantity  
cm3/1000 strokes : 37.0  
Tolerance  
cm3/1000 str. +- : 1.2  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1700  
Del. quantity  
cm3/1000 strokes : 38.0  
Tolerance  
cm3/1000 str. +- : 1.2  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 25.5  
Tolerance  
cm3/1000 str. +- : 0.2  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 425  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0  
Check tolerance  
cm3/1000S. +- : 1.5  
Spread  
cm3/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 3.0  
Shutoff solenoid  
Volt : 12

---

#### EXHAUST-GAS RECIRCULATION

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 21.3  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

#### START TRANSITION

Rated speed rpm : 480  
Del. quantity  
cm3/1000 strokes : 26.0  
Tolerance  
cm3/1000 str. +- : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 300  
Del. quantity  
cm3/1000 strokes : 48.0  
Tolerance  
cm3/1000 str. +- : 15.0

Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
HBA stroke mm : 7.7  
Dimension K mm : 2,8  
Tolerance mm  $\pm$  :  $\pm 0,1$   
Dimension KF mm : 8,4  
Tolerance mm  $\pm$  :  $\pm 0,2$   
Dimension MS mm : 1,8  
Tolerance mm  $\pm$  :  $\pm 0,2$

MICROSWITCH  
SET

: ARF 20,0

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,8..45,8

Control lever  
position YB mm : 59,5..71,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W403/...

Edition : 03.06.96  
 Test oil : ISO 4113  
 Part no. : 0 460 414 132  
 Pump designation : VE4/11F2000R663

Customer-spec. information  
 Customer : OTOSAN  
 Motor : 2.5L-DI  
 Power KW : 74.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return  
 temperature °C : 45  
 Tolerance °C ± : 1

Overflow  
 restriction mm : 0.75

Inlet press. bar : 0.35  
 Tolerance bar ± : 0.05

Test nozzle holde  
 assembly : 1 688 901 114

Opening pressure  
 bar : 207  
 Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
 x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,62  
 Tolerance mm ± : ±0,05  
 Outlet : B KDEP1151

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Setting mm : 3.2  
 Tolerance mm ± : 0.3  
 Shutoff solenoid  
 Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
 Aneroid pressure  
 hPa : 1000  
 Supply pump  
 pressure bar : 7.0  
 Tolerance bar ± : 0.3  
 Shutoff solenoid  
 Volt : 12

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 800  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm3/1000 strokes : 42.0  
 Tolerance  
 cm3/1000 str. ± : 0.2  
 Shutoff solenoid  
 Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1000  
 Del. quantity  
 cm3/1000 strokes : 29.0  
 Tolerance  
 cm3/1000 str. ± : 0.5  
 Spread  
 cm3/1000 strokes : 3.0  
 Shutoff solenoid  
 Volt : 12  
 Check tolerance  
 cm3/1000S. : 4.0

### IDLE SETTING

Rated speed rpm : 425

Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12  
Spread  
cm<sup>3</sup>/1000 strokes : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 4.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2200  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 17.8  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 80.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 20.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -5.6  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -1.8  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
SV travel mm : 4.7  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.9  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
SV travel mm : 1.9  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.9  
Shutoff solenoid  
Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 9.2  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1000  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.5  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

##### OVERFLOW QUANTITY

Rated speed rpm : 800  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 133.3  
 Tolerance  
 ccm/10s +- : 22.2

Check tolerance  
 ccm/10s +- : 22.2  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1950  
 Aneroid pressure  
 hPa : 1000  
 Overflow quantity  
 ccm/10s : 152.7  
 Tolerance  
 ccm/10s +- : 41.6

Check tolerance  
 ccm/10s +- : 41.6  
 Shutoff solenoid  
 Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2200  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 17.8  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 5.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2150  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 24.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 6.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2350  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.5

Check tolerance  
 cm<sup>3</sup>/1000S. +- : 1.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1000  
 Aneroid pressure  
 hPa : 450

LDA/  
 HBA stroke mm : 5.3  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 35.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1950  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 42.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.2  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 1750  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 42.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 1.2  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 2.5  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 800  
 Aneroid pressure  
 hPa : 1000  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 42.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. +- : 0.2  
 Check tolerance  
 cm<sup>3</sup>/1000S. +- : 3.0  
 Shutoff solenoid  
 Volt : 12

---

ELECTR. SHUTOFF  
 CONTROL LEVER, IDLE STOP



Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### CHECKING LOAD-DEPENDENT START OF DELIVERY

##### DELIVERY DIFFERENCE

Rated speed rpm : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -8.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 5.0  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : -1.8  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 0.1  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 0.1  
 Shutoff solenoid  
 Volt : 12

##### DELIVERY DIFFERENCE

Rated speed rpm : 1500

N03

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 3.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. + : 3.0  
 Shutoff solenoid  
 Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1500  
 Supply pump  
 pressure bar : -1.5  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1500  
 Tolerance mm + : 0.6  
 Check  
 tolerance mm + : 0.6  
 Shutoff solenoid  
 Volt : 12

##### START TRANSITION

Rated speed rpm : 480  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 30.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 10.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 300  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 63.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 15.0  
 Shutoff solenoid  
 Volt : 12

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

LDA/  
 HBA stroke mm : 5.3  
 Dimension K mm : 2,8  
 Tolerance mm + : +0,1  
 Dimension KF mm : 8,4  
 Tolerance mm + : +0,2  
 MS1 dimension mm : 1,8  
 Tolerance mm + : +0,15/0,1  
 KSB travel mm : 10,0

TLA travel mm : 2,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 42,8..45,8

Control lever  
position YB mm : 59,5..71,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 24.02.94  
Test oil : ISO 4113

Part no. : 0 460 484 061  
Pump designation : VE4/8F2300R317-6

## Customer-spec. information

Customer : RENAULT  
Motor : F8Q - 706 CA  
Power KW : 47.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holder  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.4  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 4.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 11.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -11.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Shutoff solenoid  
Volt : 12

## INJECTION-PUMP TEST SPECIFICATIONS

### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.2  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.5  
Tolerance mm ± : 0.4  
Check  
tolerance mm ± : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 310

SV travel mm : 2.2  
Tolerance mm ± : 1.2  
Check  
tolerance mm ± : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500

SV travel mm : 3.4  
Tolerance mm ± : 1.2  
Check  
tolerance mm ± : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 6.6  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 3.4  
Tolerance bar ± : 0.3

Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s + : 41.6

Check tolerance  
ccm/10s + : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.5

Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.3  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.6  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5

Spread  
cm<sup>3</sup>/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -15.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,5  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 7,5..8,5

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 32,6..36,6

Control lever  
position YB mm : 65,7..78,3

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.

See microcard(s) W400/...

Edition : 02.07.96

Test oil : ISO 4113

Part no. : 0 460 484 129

Pump designation : VE4/8F2300R317-9

## Customer-spec. information

Customer : RENAULT

Motor : F8C -- 706 CA

Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil

return

temperature °C : 45

Tolerance °C ± : 1

Overflow

restriction mm : 0.55

Inlet press. bar : 0.35

Tolerance bar ± : 0.05

Test nozzle holde

assembly : 1 688 901 022

Opening pressure

bar : 130

Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00

x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.4

Tolerance mm ± : 0.2

Shutoff solenoid

Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250

Supply pump

pressure bar : 4.7

Tolerance bar ± : 0.3

Shutoff solenoid

Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250

Del. quantity

cm<sup>3</sup>/1000 strokes : 31.5

Tolerance

cm<sup>3</sup>/1000 str. ± : 0.5

Spread

cm<sup>3</sup>/1000 strokes : 2.5

Shutoff solenoid

Volt : 12

## HOUSING-FIXED IDLE SPRING

## RESIDUAL QUANTITY SETTING

Rated speed rpm : 550

Del. quantity

cm<sup>3</sup>/1000 strokes : 3.0

Tolerance

cm<sup>3</sup>/1000 str. ± : 2.0

Shutoff solenoid

Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410

Del. quantity

cm<sup>3</sup>/1000 strokes : 11.0

Tolerance

cm<sup>3</sup>/1000 str. ± : 2.0

Spread

cm<sup>3</sup>/1000 strokes : 2.5

Shutoff solenoid

Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500

Del. quantity

cm<sup>3</sup>/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 26.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -11.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

## INJECTION-PUMP TEST SPECIFICATIONS

### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 310  
SV travel mm : 2.2  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500  
SV travel mm : 3.4  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 6.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 3.4  
Tolerance bar + : 0.3



Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Overflow quantity  
ccm/10s : 65.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 26.0  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 11.0  
Check tolerance  
cm3/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 32.5

Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.2  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 31.3  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Del. quantity  
cm3/1000 strokes : 31.6  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 31.5  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5

Spread  
cm<sup>3</sup>/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -15.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
SV travel mm : -0.5  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,5  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

MICROSWITCH  
SET

mm : 0,8...3,0  
: 7,5...8,5

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 29.03.94  
Test oil : ISO 4113  
Part no. : 0 460 484 059  
Pump designation : VE4/8F2300R458-2

Customer-spec. information  
Customer : RENAULT  
Motor : F8Q - 706  
Power KW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 3.4  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 4.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.1  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 3.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 11.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 28.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -11.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.2  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 310

SV travel mm : 2.2  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500

SV travel mm : 3.4  
Tolerance mm + : 1.2  
Check  
tolerance mm + : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 6.6  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 3.4  
Tolerance bar + : 0.3

Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s +- : 41.6

Check tolerance  
ccm/10s +- : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s +- : 22.2

Check tolerance  
ccm/10s +- : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm3/1000 strokes : 28.5  
Tolerance  
cm3/1000 str. +- : 3.0  
Check tolerance  
cm3/1000S. +- : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm3/1000 strokes : 14.5  
Check tolerance  
cm3/1000S. +- : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm3/1000 strokes : 2.5  
Tolerance  
cm3/1000 str. +- : 2.5  
Check tolerance  
cm3/1000S. +- : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm3/1000 strokes : 34.0

Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm3/1000 strokes : 31.6  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm3/1000 strokes : 33.5  
Tolerance  
cm3/1000 str. +- : 1.0  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Del. quantity  
cm3/1000 strokes : 31.7  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. +- : 0.5  
Check tolerance  
cm3/1000S. +- : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 1.5  
Tolerance  
cm3/1000 str. +- : 1.5  
Check tolerance  
cm3/1000S. +- : 1.5

Spread  
cm<sup>3</sup>/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -15.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. + : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
SV travel mm : -0.5  
Tolerance mm + : 0.2  
Check  
tolerance mm + : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,5  
Tolerance mm + : +0,2  
Dimension MS mm : 1,3  
Tolerance mm + : +0,2

MICROSWITCH  
SET

mm : 0,8..3,0  
: 9,8..10,8

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 25,3..29,7

Control lever  
position YB mm : 62,6..74,4

---

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.07.96  
Test oil : ISO 4113

Part no. : 0 460 484 130  
Pump designation : VE4/8F2300R458-5

## Customer-spec. information

Customer : RENAULT  
Motor : F8Q - 706  
Power kW : 45.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 022

Opening pressure  
bar : 130  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## INJECTION PUMP SETTING VALUES

## TIMING DEVICE TRAVEL

Rated speed rpm : 1250

Setting mm : 3.4  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

## SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 4.7  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

## FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm3/1000 strokes : 32.1  
Tolerance  
cm3/1000 str. ± : 0.5  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 550  
Del. quantity  
cm3/1000 strokes : 3.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Shutoff solenoid  
Volt : 12

## IDLE DELIVERY

Rated speed rpm : 410  
Del. quantity  
cm3/1000 strokes : 11.0  
Tolerance  
cm3/1000 str. ± : 2.0  
Spread  
cm3/1000 strokes : 2.5  
Shutoff solenoid  
Volt : 12

## HIGH IDLE SETTING

Rated speed rpm : 500  
Del. quantity  
cm3/1000 strokes : 9.0

Tolerance  
cm<sup>3</sup>/1000 str. +- : 2.0  
Shutoff solenoid  
Volt : 12

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 28.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 3.0  
Shutoff solenoid  
Volt : 12

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 15.0  
Shutoff solenoid  
Volt : 12

#### LOAD-DEPENDENT START OF DELIVERY SETTING

##### DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -11.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 1.0  
Shutoff solenoid  
Volt : 12

##### PRESSURE DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.2  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

##### TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. +- : 0.1  
Shutoff solenoid  
Volt : 12

#### INJECTION-PUMP TEST SPECIFICATIONS

##### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
SV travel mm : 6.2  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750

SV travel mm : 1.5  
Tolerance mm +- : 0.4  
Check  
tolerance mm +- : 0.7  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 310

SV travel mm : 2.2  
Tolerance mm +- : 1.2  
Check  
tolerance mm +- : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

Rated speed rpm : 500

SV travel mm : 3.4  
Tolerance mm +- : 1.2  
Check  
tolerance mm +- : 1.2  
Shutoff solenoid  
Volt : 12

KSB/AFB Volt : 12

##### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
Supply pump  
pressure bar : 6.6  
Tolerance bar +- : 0.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Supply pump  
pressure bar : 3.4  
Tolerance bar +- : 0.3



Shutoff solenoid  
Volt : 12

#### OVERFLOW QUANTITY

Rated speed rpm : 2250  
Overflow quantity  
ccm/10s : 97.2  
Tolerance  
ccm/10s ± : 41.6

Check tolerance  
ccm/10s ± : 41.6  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s ± : 22.2

Check tolerance  
ccm/10s ± : 22.2  
Shutoff solenoid  
Volt : 12

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 28.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 4.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2650  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 14.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 5.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2950  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 2.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 2.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 34.0

Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1625  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.6  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 31.7  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 2.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 32.1  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 2.3  
Shutoff solenoid  
Volt : 12

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 410  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.5  
Check tolerance  
cm<sup>3</sup>/1000s. ± : 1.5

Spread  
cm<sup>3</sup>/1000 strokes : 5.0

---

CHECKING LOAD-DEPENDENT  
START OF DELIVERY

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -15.2  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 2.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -0.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.1  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 0.1  
Shutoff solenoid  
Volt : 12

DELIVERY DIFFERENCE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 5.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. ± : 3.0  
Shutoff solenoid  
Volt : 12

TIMING-DEVICE TRAVEL DIFFERENCE

Rated speed rpm : 1250  
SV travel mm : -0.5  
Tolerance mm ± : 0.2  
Check  
tolerance mm ± : 0.3  
Shutoff solenoid  
Volt : 12

START TRANSITION

Rated speed rpm : 310  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 30.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 210  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 55.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 15.0  
Shutoff solenoid  
Volt : 12

---

ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm ± : ±0,1  
Dimension KF mm : 5,5  
Tolerance mm ± : ±0,2  
Dimension MS mm : 1,3  
Tolerance mm ± : ±0,2

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End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 01.07.96  
Test oil : ISO 4113  
Part no. : 0 460 426 246  
Pump designation : VE6/12F1250R498-5

Customer-spec. information  
Customer : CDC  
Motor : 6 BT 5.9B  
Power kW : 120.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 109

Opening pressure  
bar : 207  
Tolerance bar ± : 3

Test lines : 1 680 750 000

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 840

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

N21

Plunger stroke mm : 1,4  
Tolerance mm ± : ±0,02  
Outlet : D

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000

Setting mm : 1.8  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 24

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 6.8  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIVERY WITH BOOST PRESSURE

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 81.6  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000s. : 5.0  
Shutoff solenoid  
Volt : 24

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 500  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 68.1  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Shutoff solenoid  
Volt : 24  
Check tolerance  
cm<sup>3</sup>/1000s. : 6.0

Check tolerance  
cm<sup>3</sup>/1000S. : 5.0

#### IDLE SETTING

Rated speed rpm : 325  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 10.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Shutoff solenoid  
Volt : 24  
Spread  
cm<sup>3</sup>/1000 strokes : 5.5  
Check tolerance  
cm<sup>3</sup>/1000S. : 7.0

#### FULL-LOAD SPEED REGULATION

Rated speed rpm : 1380  
Pressure hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 6.0  
Shutoff solenoid  
Volt : 24

#### STARTING FUEL DELIVERY

Rated speed rpm : 100  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 85.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 15.0  
Shutoff solenoid  
Volt : 24

### INJECTION-PUMP TEST SPECIFICATIONS

#### TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
SV travel mm : 2.5  
Tolerance mm + : 0.4  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 450  
SV travel mm : 2.5  
Tolerance mm + : 0.5  
Check  
tolerance mm + : 0.7  
Shutoff solenoid  
Volt : 24

KSB/AFB Volt : 24

#### SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 7.3  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 800  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 5.7  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 500  
Aneroid pressure  
hPa : 1000  
Supply pump  
pressure bar : 4.5  
Tolerance bar + : 0.3  
Shutoff solenoid  
Volt : 24

#### OVERFLOW QUANTITY

Rated speed rpm : 500  
Overflow quantity  
ccm/10s : 63.8  
Tolerance  
ccm/10s + : 22.2

Check tolerance  
ccm/10s + : 22.2  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1250

Aneroid pressure  
hPa : 1000  
Overflow quantity  
ccm/10s : 77.7  
Tolerance  
ccm/10s + : 27.7  
Check tolerance  
ccm/10s + : 27.7  
Shutoff solenoid  
Volt : 24

#### DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 1380  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 60.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 6.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 8.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1465  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 20.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 20.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1500  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 600  
Aneroid pressure  
hPa : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 73.9  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 84.2  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.5  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 1100  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 83.8  
Tolerance  
cm<sup>3</sup>/1000 str. + : 2.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 4.0  
Shutoff solenoid  
Volt : 24

Rated speed rpm : 850  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 81.6  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.5  
Shutoff solenoid  
Volt : 24

---

#### MECHANICAL SHUTOFF

Rated speed rpm : 1250  
Aneroid pressure  
hPa : 1000  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Shutoff solenoid  
Volt : 24

---

#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 350

Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 350  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Spread  
 cm<sup>3</sup>/1000 strokes : 5.0

#### IDLE DELIVERY

Rated speed rpm : 410  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 1.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 1.5  
 Check tolerance  
 cm<sup>3</sup>/1000S. ± : 1.5  
 Shutoff solenoid  
 Volt : 24

#### START TRANSITION

Rated speed rpm : 240  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 80.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 10.0  
 Shutoff solenoid  
 Volt : 24

Rated speed rpm : 130  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 100.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. ± : 20.0  
 Shutoff solenoid  
 Volt : 24

#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,7  
 Tolerance mm ± : ±0,1  
 Dimension KF mm : 6,4  
 Tolerance mm ± : ±0,2  
 MS1 dimension mm : 1,1  
 Tolerance mm ± : +0,15/-0,1

#### CONTROL LEVER POSITION SET

Control lever  
 position YA mm : 34,8..38,8

Control lever  
 position YB mm : 43,9..49,1

End of test-specification sheet

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Refer to Service Info for test and adjustment instructions.  
See microcard(s) W400/...

Edition : 02.07.96  
Test oil : ISO 4113  
Part no. : 0 460 484 101  
Pump designation : VE4/8F220JR574-1

Customer-spec. information  
Customer : VW  
Motor : 1.9L SD

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return  
temperature °C : 45  
Tolerance °C ± : 1

Overflow  
restriction mm : 0.55

Inlet press. bar : 0.35  
Tolerance bar ± : 0.05

Test nozzle holde  
assembly : 1 688 901 111

Opening pressure  
bar : 147  
Tolerance bar ± : 3

Test lines : 1 680 750 073

Outside diameter : 6.00

x inside diameter : 2.00  
x length mm : 450

## REMARKS

## BEGINNING OF DELIVERY

Start of delivery blocking

Plunger stroke mm : 0,9  
Tolerance mm ± : ±0.2  
Outlet : A

## INJECTION PUMP SETTING VALUES

### TIMING DEVICE TRAVEL

Rated speed rpm : 1250  
Setting mm : 5.3  
Tolerance mm ± : 0.2  
Shutoff solenoid  
Volt : 12

### SUPPLY PUMP PRESSURE

Rated speed rpm : 1250  
Supply pump  
pressure bar : 5.9  
Tolerance bar ± : 0.3  
Shutoff solenoid  
Volt : 12

### FULL-LOAD DELIV. WITHOUT BOOST PRESSURE

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 0.5  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

### HOUSING-FIXED IDLE SPRING RESIDUAL QUANTITY SETTING

Rated speed rpm : 525  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 7.0  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Shutoff solenoid  
Volt : 12

### IDLE DELIVERY

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 9.5  
Tolerance  
cm<sup>3</sup>/1000 str. ± : 1.0  
Spread  
cm<sup>3</sup>/1000 strokes : 2.0  
Shutoff solenoid  
Volt : 12

# HIGH IDLE SETTING

Rated speed rpm : 525  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 9.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 1.0  
 Shutoff solenoid  
 Volt : 12

# FULL-LOAD SPEED REGULATION

Rated speed rpm : 2525  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 10.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Shutoff solenoid  
 Volt : 12

# STARTING FUEL DELIVERY

Rated speed rpm : 100  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 53.0  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 13.0  
 Shutoff solenoid  
 Volt : 12

# INJECTION-PUMP TEST SPECIFICATIONS

## TIMING DEVICE CHARACTERISTIC

Rated speed rpm : 2000  
 SV travel mm : 7.9  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 SV travel mm : 3.5  
 Tolerance mm + : 0.4  
 Check  
 tolerance mm + : 0.7  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2000  
 SV travel mm : 1.3

Tolerance mm + : 0.4  
 Shutoff solenoid  
 Volt : 12

Timing device  
 solenoid Volt : 100

## SUPPLY PUMP PRESSURE CHARACTERISTIC

Rated speed rpm : 2000  
 Supply pump  
 pressure bar : 8.0  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Supply pump  
 pressure bar : 4.3  
 Tolerance bar + : 0.3  
 Shutoff solenoid  
 Volt : 12

## OVERFLOW QUANTITY

Rated speed rpm : 2200  
 Overflow quantity  
 ccm/10s : 97.2  
 Tolerance  
 ccm/10s + : 41.6

Check tolerance  
 ccm/10s + : 41.6  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 750  
 Overflow quantity  
 ccm/10s : 63.8  
 Tolerance  
 ccm/10s + : 22.2

Check tolerance  
 ccm/10s + : 22.2  
 Shutoff solenoid  
 Volt : 12

## DELIVERY AND BREAKAWAY CHARACTERISTIC

Rated speed rpm : 2525  
 Del. quantity  
 cm<sup>3</sup>/1000 strokes : 10.5  
 Tolerance  
 cm<sup>3</sup>/1000 str. + : 2.0  
 Check tolerance  
 cm<sup>3</sup>/1000s. + : 4.0  
 Shutoff solenoid  
 Volt : 12

Rated speed rpm : 2400



Del. quantity  
cm<sup>3</sup>/1000 strokes : 27.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 6.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2675  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 2200  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 35.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 400  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 37.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 3.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 5.5  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : -3.3  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 750  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 34.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 3.0  
Shutoff solenoid  
Volt : 12

Rated speed rpm : 1250  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 33.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 0.5

Check tolerance  
cm<sup>3</sup>/1000S. + : 2.2  
Shutoff solenoid  
Volt : 12

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#### ELECTR. SHUTOFF CONTROL LEVER, IDLE STOP

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

#### FULL-LOAD STOP CONTROL LEVER

Rated speed rpm : 450  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 1.5  
Tolerance  
cm<sup>3</sup>/1000 str. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0  
Check tolerance  
cm<sup>3</sup>/1000S. + : 1.5  
Spread  
cm<sup>3</sup>/1000 strokes : 5.0

Rated speed rpm : 180  
Del. quantity  
cm<sup>3</sup>/1000 strokes : 57.0  
Tolerance  
cm<sup>3</sup>/1000 str. + : 17.0  
Shutoff solenoid  
Volt : 12

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#### ASSEMBLY AND ADJUSTMENT DIMENSIONS

Dimension K mm : 3,3  
Tolerance mm + : +0,1  
Dimension KF mm : 5,7  
Tolerance mm + : +0,2  
Dimension MS mm : 1,3  
Tolerance mm + : +0,2

CONTROL LEVER POSITION  
SET

Control lever  
position YA mm : 36,0..40,0

Control lever  
position YB mm : 47,7..61,3

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End of test-specification sheet